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Rising Temperatures In Hot Regions – How Many Species Would Be Able To Survive?

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RISING TEMPERATURES IN HOT REGIONS – HOW MANY SPECIES WOULD BE ABLE TO SURVIVE?

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This thesis is submitted in partial fulfilment of the requirements for the degree of Master of Science in Environmental Sciences

Under the Supervision of Dr. David L. Thomson

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Declaration of Original Work

I, Sounak Ghosh, the undersigned, a graduate student at the United Arab Emirates University (UAEU), and the author of this thesis entitled "*Rising Temperatures in the Hot Regions – How Many Species Would be Able to Survive?*", hereby, solemnly declare that this thesis is my own original research work that has been done and prepared by me under the supervision of Dr. David L. Thomson, in the College of Science at UAEU. This work has not previously been presented or published or formed the basis for the award of any academic degree, diploma or a similar title at this or any other university. Any materials borrowed from other sources (whether published or unpublished) and relied upon or included in my thesis have been properly cited and acknowledged in accordance with appropriate academic conventions. I further declare that there is no potential conflict of interest with respect to the research, data collection, authorship, presentation and/or publication of this thesis.

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Abstract

Temperatures are rising throughout the world but not uniformly. Different latitudes have varying degrees of temperature rise and the most rapid changes are happening in the higher northern latitudes while only minor warming is taking place in the hot tropical regions. It has been widely assumed that the biggest ecological impacts will be seen in the cooler northern latitudes and that the impacts in hot tropical regions will be much smaller. However, if species in hot regions are already close to their thermal limits and if species in cold regions are far below them, it may be that small temperature increases in hot regions may be more damaging than large temperature increases in cold regions. Here by compiling data from 726 species published in 278 publications which have measured the Upper Critical Temperatures (CT_{max}) in a wide range of ectothermic animal species, the distribution of these upper thermal limits were examined and compared with temperatures in hot and cold regions. The results indicate that very few species reach their CT_{max} below 30°C. The vast majority of species reach their CT_{max} between 30°C - 50°C. Cold regions are far below the upper critical temperatures of most species whereas the hot regions are nearer or exceeding the upper critical temperatures of many species. The impact of a 3°C temperature increase in hot and in cold regions was estimated. It was found that a 3°C temperature increase in cold regions would result in almost no species being pushed beyond their upper thermal limits. As temperatures reach 30°C, it was found that a 3°C temperature increase could push an appreciable number of species over their upper critical temperature. The magnitude of this impact then increased steadily, being much higher in hot regions. In regions where temperatures are reaching 45°C, a 3°C temperature increase could push the majority of the remaining species over their thermal limits. These results suggest

that even though temperature increases in hot regions are much smaller than temperature increases in cold regions, the ecological impacts could be much greater, and many more species could be pushed over their upper thermal limits.

Keywords: Climate change, upper critical temperature (CT_{max}), tropics, ectotherms.

Title and Abstract (in Arabic)

درجات الحرارة المرتفعة في المناطق الموبوءة - ما مدى قدرة الأنواع على لنجاة؟

الملخص

ترتفع درجات الحرارة في جميع أنحاء العالم ولكن ليس بشكل متماثل، حيث تتميز خطوط العرض المختلفة بدرجات متفاوتة من ارتفاع درجات الحرارة وتحدث التغيرات السريعة في خطوط العرض الشمالية العليا بينما يحدث ارتفاع بسيط في المناطق المدارية الحارة. وقد تم الاعتقاد سابقاً، وعلى نطاق واسع، بأن أكبر التأثيرات البيئية ستظهر في خطوط العرض الشمالية الأكثر برودة وأن التأثيرات في المناطق المدارية الحارة ستكون أقل بكثير. ومع ذلك، قد يكون ارتفاع درجات الحرارة الصغيرة في المناطق الحارة، حيث تكون الأنواع قريبة بالفعل من حدودها الحرارية، أكثر ضرراً من الزيادات الكبيرة في درجات الحرارة في المناطق التي لا تزال الأنواع فيها أدنى بكثير منها. ومن خلال تجميع البيانات من 726 دراسات، والمتعلقة بقياس درجات الحرارة الحرجة العليا لمجموعة واسعة من الأنواع الحيوانية الحرارية، قمت بدراسة توزيع هذه الحدود الحرارية العليا ومقارنتها بدرجات الحرارة في المناطق الساخنة والباردة. وتشير النتائج إلى أنه في أنواع قليلة جداً تصل درجة الحرارة الحرجة العليا إلى أقل من 30 درجة مئوية، وتتراوح درجات الحرارة في الغالبية العظمى من الأنواع ما بين 30 إلى 50 درجة مئوية. تكون الحدود الحراري في المناطق الباردة أقل من درجات الحرارة الحرجة العليا لمعظم الأنواع في حين أنها المناطق الحارة أقرب أو تتجاوز درجات الحرارة الحرجة العليا لكثير من الأنواع. وقد وضعت نموذجاً يظهر تأثير زيادة 3 درجات مئوية في المناطق الساخنة والباردة، ووجدت بأن هذه الزيادة في المناطق الباردة يمكن أن تسبب في عدم وصول أي نوع تقريباً إلى ما وراء حدودها الحرارية العليا. ومع وصول درجات الحرارة إلى 30 درجة مئوية، وجدت بأن زيادة 3 درجات مئوية قد تسبب في وصول عدداً ملموساً من الأنواع إلى درجات الحرارة الحرجة العليا. وقد ازداد حجم هذا التأثير بشكل مطرد، حيث كان أعلى بكثير في المناطق الساخنة. أما بالنسبة إلى المناطق التي تصل فيها درجات الحرارة إلى 45 درجة مئوية، فإن زيادة 3 درجات مئوية قد تسبب في عبور غالبية الأنواع المتبقية حدودها الحرارية. وتشير نتائجي إلى أنه على الرغم من أن درجات الحرارة في المناطق الحارة أقل بكثير من الزيادة في درجات الحرارة في المناطق الباردة، إلا أن التأثيرات البيئية قد تكون أعلى بكثير، ويمكن دفع العديد من الأنواع عبر حدودها الحرارية.

مفاهيم البحث الرئيسية: تغير المناخ، درجة الحرارة الحرجة العليا (CT_{max})، المناطق المدارية، متغيرات الحرارة.

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I cherish my association with Dr. Thomson over the last four years during the course of my research. It helped me enhance my knowledge in the field of environmental science especially on the topic of climate change.

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Dedication

To my beloved parents, friends and colleagues at Envirozone

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Acronyms and Abbreviations

CT_{max}	Upper Critical Temperature
GHG	Green House Gas
IPCC	Intergovernmental Panel on Climate Change
IUCN	International Union for Conservation of Nature
NCM	National Centre of Meteorology
T_{opt}	Optimum Temperature

Chapter 1: Introduction

1.1 Overview

Temperatures are rising all throughout the world, but the magnitude of these changes differs between regions (Alexander et al., 2006; IPCC, 2013) leading to speculation about where the biggest ecological impact of climate change would be (IPCC, 2014). From Figure 1, it is evident that the biggest temperature change is happening in the cooler, higher northern latitudes, so there has been widespread speculation that this is where the biggest ecological impacts would be and so far, this is where the great majority of all research on climate impacts has been focused (Rosenzweig et al., 2008; IPCC, 2014; Sekercioglˇlu et al., 2012).

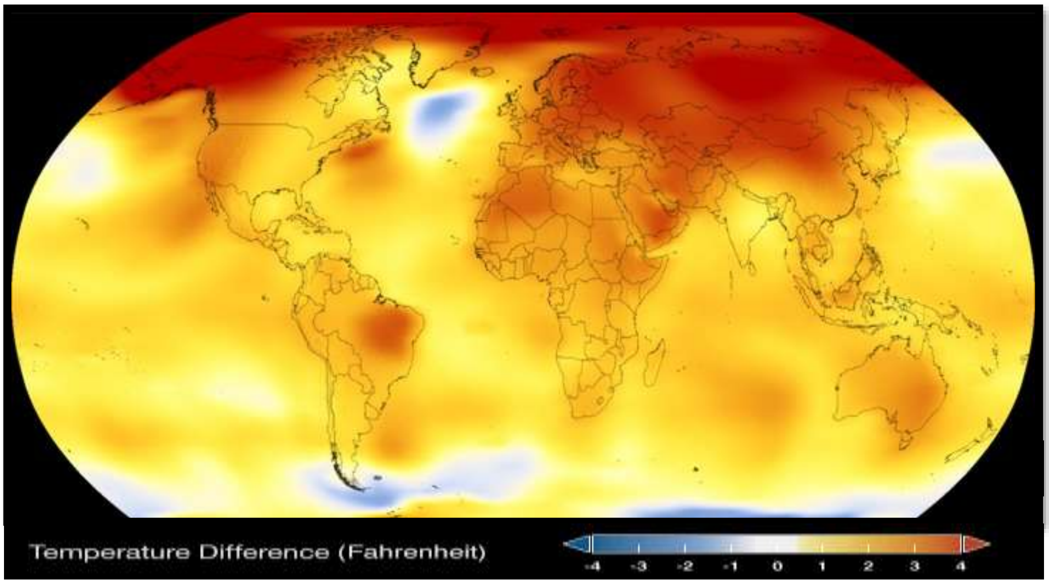

Figure 1: Temperature Difference in Fahrenheit (1884-2017)
Source : (NASA, 2019)

However, although there are bigger temperature changes in the higher northern latitudes, it could be that species in hot regions are closer to their upper thermal limits.

Even though the risks have largely been ignored with less than 1% of climate impact research done in hot tropical regions, it may be that these are the regions in which the ecological impacts of climate change will be the largest. The biggest temperature change may not be taking place in the tropics but if species are already living close to their upper critical temperature (CT_{max}) a slight increase in the hot regions which are already hot could push the species closer to their 'Upper Critical Temperature'.

1.2 Statement of the Problem

Although the biggest temperature change will take place in the mid and high latitudes, it may be that the species in the hot regions are more vulnerable. If species in the hot regions are already close to their CT_{max} and if species in cold regions are still some way below their CT_{max}, the impacts of even small temperature increases in hot regions could be more negative. Here by synthesizing published CT_{max} data on a wide range of ectotherms in mainstream scientific journals, the extent to which species in hot and cold regions are approaching their upper critical limits will be compared. In order to compare the vulnerability of species in hot and cold regions, the percentage of species which would be pushed above their upper thermal limits by an increase in temperature by 3°C will be compared.

1.3 Literature Review

There is now unequivocal evidence that not only climate is changing but also these changes are driven by anthropogenic factors (IPCC, 2013). Although there is evidence that climate has been changing long before the appearance of modern man and although the earth has experienced even warmer temperatures at times than what is see today, the paleoclimatic evidence of the last 750,000 years shows that the earth is now facing temperature increases at an unprecedented rate (IPCC, 2013). It is known that the total temperature increase from 1850–1899 to 2001–2005 is 0.76°C [0.57°C to 0.95°C] (Solomon et al., 2007). Anthropogenic factors are responsible for most of the observed climate change phenomena in the mid-20th century due to the observed increase in greenhouse gas concentrations (IPCC, 2013). While there are efforts to avoid changes of more than 1.5°C, climate models continue to predict increases of around 3°C on average and in some region temperature changes are found to be higher than other regions.

Although climate change is now a subject of intense interest, there has not always been widespread acceptance of the issue. For many decades there were only a few publications giving it just a passing mention. However, interest increased and by the 1980s the issue was being given sufficient weight such that the United Nations and the World Meteorological Organization established the Intergovernmental Panel on Climate Change (IPCC) to review and evaluate the issue, leading to comprehensive assessment reports every 5-6 years (IPCC 1990, 1995, 2001, 2007, 2013, 2014). Prior to the 1980s only a few hundred papers on climate change had been published, but with increasing interest this number has now grown to almost 300,000 (Web of Science, 2019a). The IPCC assessment reports have involved the work of several thousand climate scientist synthesizing this substantial literature.

Although climatic warming is a global phenomenon, there is variation in the rate by which different regions across all parts of Earth are getting warm. The temperature increases in hot regions are substantially less than temperature increases in northern latitudes. Both amount and rate of warming are equally important for coping with climate change. With the rise in temperature, high latitude systems are losing snow cover, and this is one of the factors which influences the rate of temperature increase (NOAA, 2019). Snow is having high albedo and reflects 80 to 90 percent of the incoming solar radiation (Ambach, 1974; National Snow & Ice Data Centre, 2019). This high reflectivity has historically limited the amount of solar energy being absorbed in the high latitudes (National Snow & Ice Data Centre, 2019), and snow therefore helps in regulating the earth's surface temperature (NOAA, 2019). With receding snow cover the ground in cooler regions gets exposed to sun rays and result in less reflection of the incoming solar radiation thus disturbing the earth's energy balance leading to warmer surface temperatures especially in the cooler regions (National Snow & Ice Data Centre, 2019).

Not only has there been increasing interest in climate change per se, there has of course also been increasing interest in the impacts which climate change could have. There are now almost 95,000 papers on climate change impacts (Web of Science, 2019b), and the review and synthesis of this literature also falls within the remit of the IPCC assessment reports. The synthesis of this enormous literature reveals that there has been so far a widespread assumption that climate change would have major impacts in the mid- and high northern latitudes and negligible impacts in the hot regions like the Tropics (IPCC, 2014 & 2007). Only limited number of researches on climate change impacts have been carried out in the tropics by a handful of research groups (Tewksbury et al., 2008; IPCC, 2014; Corlett, 2012). By the time AR5 synthesis report was published, some interest was beginning to emerge in the possibility that these hot regions may actually be the place where the climate impacts will be large. This has so far largely been a minority view and in most of the IPCC reports, these ideas have not even been mentioned. In the AR5 synthesis report, there was finally a passing mention of climate change impacts in hot regions like the tropics. This was based on quite a small number of studies which had suggested that ecological impacts in hot regions may be greater than northern cold regions, but despite this mention the emphasis was still on the impacts in the northern latitudes as temperature changes are more marked in these high latitudes (IPCC, 2013 & 2014). Even when these ideas were referenced in the IPCC 2014 reports, the reference which were cited as evidence of large impacts were juxtaposed with several references mentioning that they may be negligible (Gonzalez et al., 2010; Corlett, 2011; Laurance et al., 2011; Gunderson and Leal, 2012; Walters et al., 2012). The IPCC Assessment Reports 1,2,3 & 4 reveal that it has long been assumed that the ecological impacts are higher at high latitudes whereas less pronounced in the tropics. Most of the scientific studies as noted by Harris et al., (2011) still tend to focus on temperate environments, with rare mention of changes in the tropics.

Although most of the attention continues to be focused on the ecological impacts in cold regions, interests have been emerging in the possibility that species in hot regions may actually be more vulnerable. Sekerciog˘lu et al. (2012) have explored the idea that species in hot regions may be vulnerable to change in temperatures due to their inability to move to favorable temperature regions. This may vary between species and Pounds et al. (1999) show that change in climate could impact different groups in different ways with some species being able to move while others not. Chen et al. (2011) reviewed extensive evidence which showed that some species are capable of moving fast enough to keep track of changing climate, but others are only capable of very restricted movement. For species living in hot regions there are reasons why the scope for movement may be more limited. In northern latitudes, relatively small change in latitudes can result in large changes in temperature while this is not true in hot tropical regions where organisms can move over large latitudinal distances without facing large changes in temperature (Corlett, 2014). Altitudinal migration offer scope for much more rapid temperature changes, but this can only be as high as the highest mountain in that region and is thus restricted by the geography and topography of that area (Primack & Corlett, 2005). Many tropical species have restricted geographical ranges (Sekercioğlu et al., 2012) and are limited in their scope for movement in response to climate change.

Among those who have explored the vulnerability of species in hot regions, limits to migration are not the only area of interests and some have examined the possibility the species in hot regions may have already reached or gone beyond their optimum temperature. Deutsch et al. (2008) and Tewksbury et al. (2008) argued that many tropical ectotherms have already gone beyond their physiological optima. They further argued not only the performance will decrease with rise in temperature, but these decreases will be particularly steep. They argued that species in hot regions are typically exposed to much lower temperature variability than species in cooler regions and that their thermal performance curves are much narrower, and performance drops rapidly as the temperature rise beyond their optima.

Among the small band of researchers investigating the species in hot regions there have so far been considerable emphasis on whether the species have already reached these optimum temperatures and whether a further increase in temperature be more negative (Tewksbury et al., 2008). However, these negative impacts need not necessarily imply that they can take the organisms beyond temperatures which they can survive (Angilletta, 2009). T_{opt} is undoubtedly an important temperature but equally important is Upper Critical Temperature (CT_{max}) which can be used to measure the vulnerability of species to rise in temperature. CT_{max} is a metric often used to understand the thermal limits of an organism (Angilletta, 2009). The CT_{max} relates to persistent behavioral changes in the organisms (Barnes et al., 2019). Figure 2 shows a typical thermal performance curve of an organism. The curve explains that with the rise in body temperature of an organism the relative performance also increases until the optimum temperature (T_{opt}) is reached at which the relative performance of the organism is at its peak. With further increase in body temperature, there is a precipitous drop in the performance of the organism until the upper critical temperature (CT_{max}) is reached at which the metric of performance falls to zero. It is the temperature which is the upper limit of performance (Rohr et al., 2018) of an organism.

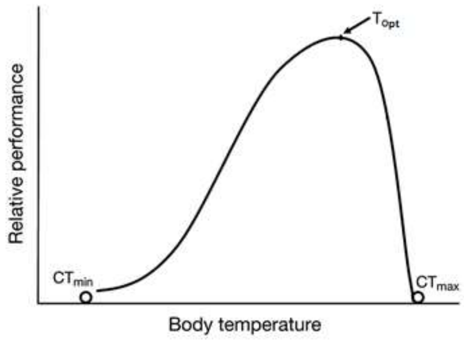

Figure 2: Thermal Performance Curve
Source: (Chown et al. 2010)

Though there are a few emerging views which suggest that the species in hot regions are more vulnerable to rise in temperatures, the majority view is that it is the cold regions which are more at risk. This assumption was challenged through this thesis and it was looked at whether it is actually the species in hot regions which are more at risk to rise in temperatures. To test the hypothesis, the CT_{max} data which have been measured in a large number of ectothermic organisms was utilized as it helps to understand how well the species can cope with the temperatures in the hot vs cold regions.

Chapter 2: Methods

2.1 Research Design

If it is required to know whether species in hot regions are more vulnerable of crossing their upper thermal limits, there is a need to examine where these upper critical temperatures lie relative to the prevailing temperatures of the environment. These Upper Critical Temperatures (CT_{max}) can be thought of as the maximum body temperature tolerated by an organism i.e.; the temperature at which a species' physiology can no longer function and survival cannot be sustained (Angilletta, 2009). CT_{max} has now been measured on a large number of species (Araújo, 2013). In order to ensure the quality of data, the data published in mainstream scientific journals was used. Here by synthesizing 726 estimates of CT_{max} published in mainstream scientific journals, the author was able to look at how these CT_{max} are distributed and compare the extent to which hot regions and cold regions are at risk. The author was also able to compare the impacts of warming using the percentage of species unable to survive a 3°C increase in hot vs cold regions.

After compiling the data sets of ectotherms, two different graphs were generated. The first graph tells about where the CT_{max} lie and the vulnerability of reaching these temperatures between the hot and cold regions. The curve generated shows the relation between the rate at which the number of species attains it's CT_{max} with the rise in temperature moving along the x-axis.

In order to compare the vulnerability of species in hot vs cold regions, the second graph was plotted, which compares the temperature rise of 3°C which is in line with predictions given by most of the climate model studies like that of IPCC (IPCC, 2014). It was demonstrated that the species would be pushed over their CT_{max}. The curve thus generated gives how much percentage of species from the compiled data set of 726 species will survive for every 3°C rise in earth surface temperature. It is needed to know where these upper critical temperatures lie and where the species lie with respect to the upper critical temperature.

2.2 Data Collection

To answer the question about the survival of species due to predicted rise in temperatures in hot vs cold regions, the CT_{max} of various species was needed. The CT_{max} data for a large number of ectotherms have been already measured by researchers for various projects. It is this information of CT_{max} data that is just required. Using standard literature searching techniques on Web of Science, a database of 726 species comprising of CT_{max} of ectotherms across the globe was compiled. This database of 726 species has been compiled from 278 studies with the earliest study carried out in the year 1955 until the latest study carried out in the year 2018 which shows that the database covers various studies spread over a range of 63 years. Details of the publications from which data were extracted and details of the publications cited in the text are set out in the 'References' section.

Chapter 3: Results

The CT_{max} of 726 ectotherm species from the studies are plotted in the graph as shown in Figure 3. Very few species reach their CT_{max} below 30°C, and there are very few species which have not reached their CT_{max} by 50°C. In other words, the CT_{max} of most of the 726 species is between 30°C - 50°C and that too the decline rate is at a fast pace until the temperatures of above 50°C are reached when ultimately limited species will survive. With the predicted increase in mean temperatures by the climate models, it would become more difficult for any remaining species of the ectotherms to survive when the predicted increase will take place as per the climate models.

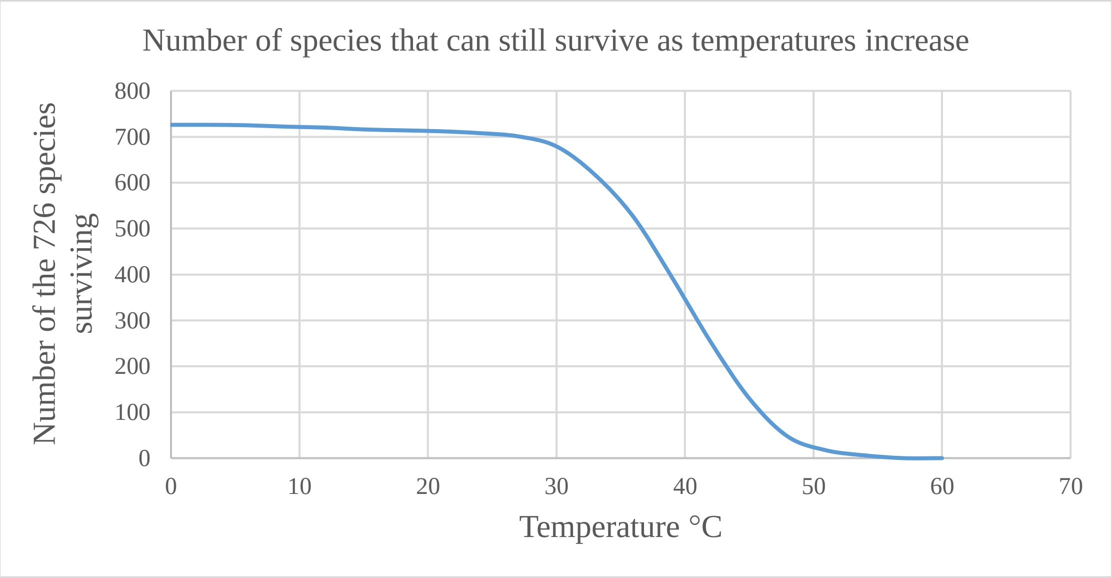

Figure 3: Variation of CT_{max} of species

From this 'survivorship curve' (Figure 3), it can be seen that cool regions are still some way below the thermal limits of most species, while hot regions are already near or above them. Very few species reach their upper thermal limits below 30°C, but above 30°C there is a steep 'Thermal Cliff', and very few species are left surviving by

50°C. Very few species are able to survive the temperatures that is already seen in hot regions such as the landmass in proximity of Arabian Gulf.

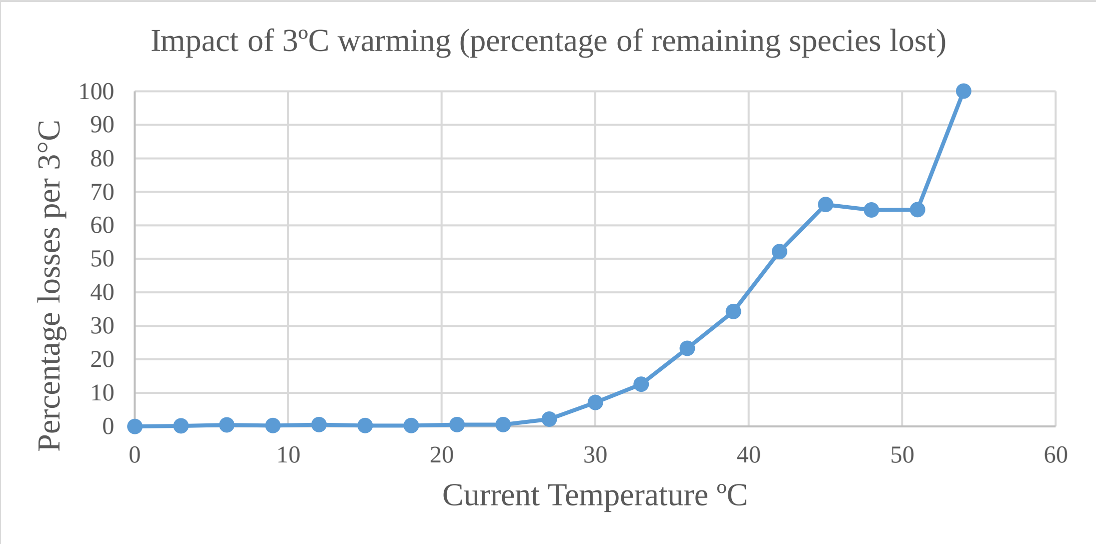

Figure 4: Impact of 3°C warming on species

In cool regions, the second graph in Figure 4, shows only negligible impacts of a 3°C temperature increase, with less than 1% of species being pushed beyond their upper thermal limits. Above 30°C, impacts increase steadily, and above 40°C a 3°C increase can push the majority of remaining species over their limits. “The GCC region is already averaging around summer temperatures of 44-48°C” (NCM, 2019), a 3°C increase in temperatures is enough to push the species above their CT_{max} in the summer months which itself is too hot for most of the species to survive.

The results suggest that hot regions are much more vulnerable to rising temperatures than cold regions. In a cold region, the species won’t be pushed to their CT_{max} by a rise of 3°C, but in the hot regions a large number of species that survives would be pushed over their CT_{max}.

Chapter 4: Discussion

Warming in the tropics is less pronounced compared to mid- and high latitudes in the Northern Hemisphere – since 1950s the temperature has risen in the Arctic circle by 1.1°C (Noël et al., 2018) whereas in the tropics the temperature has risen by 0.85°C (IPCC, 2014). The projected exposure to rising temperatures will be highest in the high latitude systems (IPCC, 2007; Diffenbaugh and Giorgi, 2012), which all else being equal would put them at higher risk. And not surprisingly, it has been widely assumed that ecological changes in hot regions will be small compared to cooler northern latitudes (Tewksbury et al., 2008; Alley et al., 2003). This assumption is further reflected on the geographical distribution of research on the impact of climate change with the great majority of the climate change impact studies have been documented in the mid- to high latitudes compared to less than 1% of the studies being done in the hot regions (Rosenzweig et al., 2008; Harris et al., 2011; IPCC, 2013; IPCC, 2007; Sekerciog˘lu et al., 2012; Dillon et al., 2010). However, the vast majority of research has been focused on species in cold regions, there have been some interest shown in species in hot regions. Interest in the potential vulnerability of species in hot regions has not been driven just by a single idea but a number of different possible reasons why they might be vulnerable. One of the ways in which species contain the rise in temperature is by moving to new regions and there is indeed evidence that warming of the earth due to climate change has led to changes in the species distribution (Pounds et al., 1999). However, for species in different regions, the scope to cope up with climate change is not equal. In particular, some have argued that species in hot regions have less scope to move to favourable regions. Species in hot regions may be vulnerable to change in temperatures due to their inability to move to favorable temperature regions (Sekercioğlu et al., 2012).

Some have explored the idea that species in hot regions may be vulnerable not because their inability to move but because they have reached their optimal temperatures. Likewise, optimum temperature of species in hot regions is also a cause of concern as it may be that species in hot regions have already reached their optimum temperature (Tewksbury et al., 2008).

On top of these ideas, there is also possibility that species in hot regions may be vulnerable not because of their inability to move but because they are adapted to live in narrow range of temperature. Most of the species in the tropics have a narrow thermal performance curve and hence a slight change in temperature will make them vulnerable (Tewksbury et al., 2008).

The results indicate that not only many species in hot regions are challenged by the difficulty in moving and they are above their optimum temperature but species in hot regions are already living closer to their Upper Critical Temperature (CT_{max}). It shows that it is not the magnitude of rise in temperature that is key for the survival of an organism rather the proximity of the organism living closer to their upper critical temperature (CT_{max}) that determines its vulnerability. Looking ahead, even though the largest temperature increase is expected to take place in the cold regions (Sachs and Lehman, 1999), they are not expected to overtake the regions which are currently hot (Giorgi, 2006). Although the temperature changes in the hot regions are smaller, these regions are still predicted to experience the highest temperature on the planet. The results suggest that though the temperature change may not be marked in the hot regions compared to the cold regions, but the species living in the hot regions are already living close to their upper critical temperature. Hence a slight increase in temperature will be enough to push these species beyond their upper critical temperature making it difficult to sustain.

Based on data for the CT_{max} from no fewer than726 ectothermic species from 278 publications, very few species were found reaching their CT_{max} below 30°C. The results suggest that beyond the temperature of 30°C can be identified as a thermal cliff. The species attains their CT_{max} at a faster rate as the temperature of 30°C is crossed. By the time the temperature of 50°C is reached, there are very few species left from the data set which are able to cope at these temperatures.

4.1 Vulnerable Species

Although the key message from this analysis is a general one namely that species in hot regions are particularly vulnerable to rise in temperatures, it is clear from the data compiled that there are a number of specific species about which there should be particularl concern. In the dataset there are many desert species including a certain number of conservation concern which feature in the IUCN Red List which could be vulnerable to rise in temperatures as they may already be living close to their CT_{max}. For example, *Liolaemus salinicola* is a desert lizard which was assessed in the year 2014 as an Endangered B1 ab(iii,v) species and published in the IUCN Red List in the year 2017 (Abdala, 2017). The CT_{max} of *Liolaemus salinicola* is 48.21°C (Cruz et al., 2005). Another species in the dataset, *Chamaeleo schubotzi* is dwarf chameleon assessed in the year 2013 as Near Threatened species and published in the IUCN Red List in the year 2014 (Trolley and Mennegon, 2014). The CT_{max} of *Chamaeleo schubotzi* is 41.6°C (Bennet, 2004). Similarly, *Anolis armouri* assessed in the year 2009 as Near Threatened species and published in IUCN Red List in the year 2011 (Queiroz and Mayer, 2011). The CT_{max} of *Anolis armouri* is 39°C (Hertz and Huey, 1981). All the above-mentioned species are featured in the IUCN Red List due to their dwindling population. The upper critical temperature of these species allows them to inhabit these areas where they are, however in all cases the population decline may be further aggravated due to the proximity of these species to their CT_{max} in their natural habitat.

4.2 Implication of this study for UAE

This study challenges the assumption of the scientific community about major climate change impacts happening in the high latitudes (IPCC, 2014). These findings indicate that it is in fact the hot regions where the major impacts of climate change will be felt and the species in these regions will be most affected. The UAE lies in one of the hottest regions of the world (Environment Agency-Abu Dhabi, 2017) and the temperatures are rising (Dougherty, 2009). The temperature changes are smaller than in cooler regions (Environment Agency-Abu Dhabi, 2017) and while the impacts have been considered (Dougherty, 2009), the amount of change has been considered small and the impacts often neglected (IPCC, 2014). The result of this study highlights potential vulnerability of species in hot regions and shows that impacts could be much larger in the hot regions than previously assumed. The species in the hot regions have a reduced buffer as they are already living in temperature ranges which are closer to their $CT_{max.}$ Given the potential vulnerability of species in hot regions like UAE and given just how little of the world's research effort has been focused on climate change research in hot regions, it is critical that further research effort is targeted in hot regions like the UAE.

4.3 Future Directions

In terms of future directions, the most important issue highlighted by these findings is the urgent need for a much greater focus on the ecological impacts of climate change in the hot regions. This conclusion of this study places the greatest biological risks of climate change in the hot regions and this is unfortunately a region in which the ecological impacts of climate change remain relatively under-studied (Dougherty, 2009). The focus in this study has been on the vulnerability of species in approaching their CT_{max} in hot and cold regions as well as the survival of the species with the predicted rise in temperature by 3°C. Presently there is enormous mismatch between where research is focused and where the impacts would be maximum. It has been widely assumed that cooler regions will have biggest impacts of climate change compared to hot regions. In these regions, less than 1% of the climate change impact studies are focused. These results indicate that time has come to stop assuming that climate change impacts in hot regions are negligible.

In this study the focus has been on the general principle whether species in the hot regions are living closer to their CT_{max}. Given the interest in this broad principle, data from a wide diversity of different taxonomic groups have been combined. While this diverse data set has revealed the breadth of the general principles and highlighted the vulnerability of species in hot regions, it will be valuable to examine whether all of these different taxonomic groups are equally vulnerable or whether some may be better able to cope than others.

The upper critical temperatures (CT_{max}) studied here are primarily a concept which is relevant to ectothermic species (Angilletta, 2009). Ectothermic animals (such as insects, fish, reptiles and amphibians) were selected for this study as they cannot maintain a constant internal body temperature (Pinsky et al., 2019). Endothermic species have the thermoregulatory physiology which allows them to maintain a constant body temperature even when the temperature of the environment is highly variable (McNab, 2002). The relationship between performance and the environmental temperature is therefore fundamentally different in endotherms and the results published in this study from the ectotherms cannot simply be extrapolated directly to endotherms. It would however be valuable to know just how close endotherms are to the maximum temperatures with which they can cope in hot vs cold regions.

Chapter 5: Conclusion

It has been widely assumed that the biggest impacts of climate change will take place in the higher cooler northern latitudes where temperatures have been rising most rapidly, but if hot regions are already closer to the upper thermal limits which species can tolerate, then it could be that impacts in these hot regions could actually be more negative even if the temperature increases are smaller. Historically, almost all of the world's research into climate impacts has focused on the higher cooler latitudes, but here by synthesizing data from 726 published studies it was found that very few species reach their upper thermal limits at temperatures below 30°C. Most species are lost between 30°C and 50°C, with the rate of losses accelerating over this range. Although the pace of temperature increase may be slower, these results suggest that it is hot regions which are most at risk from rising temperatures, and countries such as the UAE with summer temperatures between 44°C and 48°C are especially vulnerable. Very few of the world's species can survive the temperatures that is currently seen in the UAE, and most of those which can would be wiped out if temperatures were to rise by another 3°C. Although less than 1% of studies are carried out in the hot regions, the results show that the major impacts would be in these regions compared to the cold regions where at present 99% of climate change studies are focused.

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Appendix

Table 1: CT_{max} Data Set

Species name	Taxonomic Order	CT_{max} (°C)	Reference
Liothyrella uva	Terebratulida	4.5	Peck, L. S. (1989). Temperature and basal-metabolism in 2 antarctic marine herbivores. J. Exp. Mar. Biol. Ecol., 127, 1-12.
Lepidonotothen nudifrons	Perciformes	9	Hardewig, I., Peck, L. S., & Portner, H. O. (1999). Thermal sensitivity of mitochondrial function in the Antarctic Notothenioid Lepidonotothen nudifrons. J. Comp. Physiol. B., 169, 597-604.
Nacella concinna	Archaeogastropoda	9	Peck, L. S. (1989). Temperature and basal-metabolism in 2 antarctic marine herbivores. J. Exp. Mar. Biol. Ecol., 127, 1-12.
Laternula elliptica	Pholadomyoida	9	Peck, L. S., Portner, H. O., & Hardewig, I. (2002). Metabolic demand, oxygen supply, and critical temperatures in the antarctic bivalve Laternula elliptica. Physiol. Biochem. Zool., 75, 123-133.
Paraleptognathia antarctica	Tanaidacea	10	Bates, A. E., Lee, R. W., Tunnicliffe, V., & Lamare, M. D. (2010). Deep-sea hydrothermal vent animals seek cool fluids in a highly variable thermal environment. Nature Communications, 1, 1-6.
Orchomene pinguides	Amphipoda	12	Bates, A. E., Lee, R. W., Tunnicliffe, V., & Lamare, M. D. (2010). Deep-sea hydrothermal vent animals seek cool fluids in a highly variable thermal environment. Nature Communications, 1, 1-6.

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
Heterophoxus videns	Amphipoda	13	Bates, A. E., Lee, R. W., Tunnicliffe, V., & Lamare, M. D. (2010). Deep-sea hydrothermal vent animals seek cool fluids in a highly variable thermal environment. Nature Communications, 1, 1-6.
Philomedidae sp.	Myodocopida	14	Bates, A. E., Lee, R. W., Tunnicliffe, V., & Lamare, M. D. (2010). Deep-sea hydrothermal vent animals seek cool fluids in a highly variable thermal environment. Nature Communications, 1, 1-6.
Onoba gelida	Neotaenioglossa	14	Bates, A. E., Lee, R. W., Tunnicliffe, V., & Lamare, M. D. (2010). Deep-sea hydrothermal vent animals seek cool fluids in a highly variable thermal environment. Nature Communications, 1, 1-6.
Eudorella splendida	Cumacea	15	Bates, A. E., Lee, R. W., Tunnicliffe, V., & Lamare, M. D. (2010). Deep-sea hydrothermal vent animals seek cool fluids in a highly variable thermal environment. Nature Communications, 1, 1-6.
Paramoera walkeri	Amphipoda	15.02	Bates, A. E., Lee, R. W., Tunnicliffe, V., & Lamare, M. D. (2010). Deep-sea hydrothermal vent animals seek cool fluids in a highly variable thermal environment. Nature Communications, 1, 1-6.
Nacella concinna	Archaeogastropoda	15.6	Davenport, J. (1997). Comparisons of the biology of the intertidal subantarctic limpets Nacella concinna and Kerguelenella lateralis. J. Molluscan Stud., 63, 39-48.
Margarites refulgens	Archaeogastropoda	19	Bates, A. E., Lee, R. W., Tunnicliffe, V., & Lamare, M. D. (2010). Deep-sea hydrothermal vent

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
			animals seek cool fluids in a highly variable thermal environment. Nature Communications, 1, 1-6.
Nymphon sp.	Pantopoda	20	Bates, A. E., Lee, R. W., Tunnicliffe, V., & Lamare, M. D. (2010). Deep-sea hydrothermal vent animals seek cool fluids in a highly variable thermal environment. Nature Communications, 1, 1-6.
Oncorhynchus nerka	Salmoniformes	21.5	Brett, J. R. (1970). in Marine Ecology, Vol. 1, Environmental Factors, ed. Kinne O (Wiley-Interscience, Chichester), pp. 515–616.
Tigriopus angulatus	Harpacticoida	21.9	Davenport, J., & Davenport, J. L. (2005). Effects of shore height, wave exposure and geographical distance on thermal niche width of intertidal fauna. Mar. Ecol. Prog. Ser., 292, 41-50.
Oncorhynchus keta	Salmoniformes	23.2	Brett, J. R. (1970). in Marine Ecology, Vol. 1, Environmental Factors, ed. Kinne O (Wiley-Interscience, Chichester), pp. 515–616.
Clupea herengus	Clupeiformes	23.5	Brett, J. R. (1970). in Marine Ecology, Vol. 1, Environmental Factors, ed. Kinne O (Wiley-Interscience, Chichester), pp. 515–616.
Drepanosiphum platanoids	Hemiptera	25	Wellings, P. W., & Dixon, A. F. G. (1983). Physiological constraints on the reproductive activity of the sycamore aphid: the effect of developmental experience. Entomologia Experimentalis et Applicata, 34(3), 227-232.
Balanus crenatus	Sessilia	25.2	Davenport, J., Barnett, P. R. O., & McAllen, R. J. (1997). Environmental tolerances of three species of

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
			the harpacticoid copepod genus Tigriopus. J. Mar. Biol. Assoc. U.K., 77, 3-16.
Tectura testudinalis	Patellogastropoda	25.5	Davenport, J., & Davenport, J. L. (2005). Effects of shore height, wave exposure and geographical distance on thermal niche width of intertidal fauna. Mar. Ecol. Prog. Ser., 292, 41-50.
Philoria sphagnicola	Anura	25.8	Johnson, C. R. (1972). Diel variation in the thermal tolerance of Litoria gracilenta (Anura: Hylidae). Comparative Biochemistry and Physiology Part A: Physiology, 41(4), 727-730.
Drepanosiphum acerinum	Hemiptera	26.04	Wellings, P. W., & Dixon, A. F. G. (1983). Physiological constraints on the reproductive activity of the sycamore aphid: the effect of developmental experience. Entomologia Experimentalis et Applicata, 34(3), 227-232.
Hyperomyzus lactucae	Hemiptera	26.1	Shu-Sheng, L., & Hughes, R. D. (1987). The influence of temperature and photoperiod on the development, survival and reproduction of the sowthistle aphid, Hyperomyzus lactucae. Entomologia Experimentalis et Applicata, 43(1), 31-38.
Gibbula cineraria	Archaeogastropoda	27	Davenport, J., Barnett, P. R. O., & McAllen, R. J. (1997). Environmental tolerances of three species of the harpacticoid copepod genus Tigriopus. J. Mar. Biol. Assoc. U.K., 77, 3-16.
Sitobion fragariae	Hemiptera	27.74	Sunnucks, P., Chisholm, D., Turak, E., & Hales, D. F. (1998). Evolution of an ecological trait in parthenogenetic Sitobion aphids. Heredity, 81(6), 638.

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
Brevicoryne brassicae	Hemiptera	27.86	Wyatt, I. J., & White, P. F. (1977). Simple estimation of intrinsic increase rates for aphids and tetranychid mites. Journal of Applied Ecology, 14(3), 757-766.
Halmaeusa atriceps	Coleoptera	28.1	Slabber, S., & Chown, S. L. (2005). Differential responses of thermal tolerance to acclimation in the sub-Antarctic rove beetle Halmaeusa atriceps. Physiological Entomology, 30, 195-204.
Scirtothrips perseae	Thysanoptera	28.15	Hoddle, M. S., Robinson, L., & Morgan, D. (2002). Attraction of thrips (Thysanoptera: Thripidae and Aeolothripidae) to colored sticky cards in a California avocado orchard. Crop Protection, 21(5), 383-388.
Nucella lapillus	Archaeogastropoda	28.2	Davenport, J., & Davenport, J. L. (2005). Effects of shore height, wave exposure and geographical distance on thermal niche width of intertidal fauna. Mar. Ecol. Prog. Ser., 292, 41-50.
Limnodynastes fletcheri	Anura	28.3	Johnson, C. R. (1972). Diel variation in the thermal tolerance of Litoria gracilenta (Anura: Hylidae). Comparative Biochemistry and Physiology Part A: Physiology, 41(4), 727-730.
Pachymedusa dacnicolor	Anura	28.8	Brattstrom, B. H. (1968). Thermal acclimation in anuran amphibians as a function of latitude and altitude. Comp. Biochem. Physiol., 24, 93-111.
Phyllomedusa dacnicolor	Anura	28.8	Brattstrom, B. H. (1968). Thermal acclimation in anuran amphibians as a function of latitude and

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
			altitude. Comparative Biochemistry and Physiology, 24(1), 93-111.
Philoria frosti	Anura	28.8	Johnson, C. R. (1972). Diel variation in the thermal tolerance of Litoria gracilenta (Anura: Hylidae). Comparative Biochemistry and Physiology Part A: Physiology, 41(4), 727-730.
Myzus persicae 1	Hemiptera	28.82	Wyatt, I. J., & White, P. F. (1977). Simple estimation of intrinsic increase rates for aphids and tetranychid mites. Journal of Applied Ecology, 14(3), 757-766.
Sitobion miscanthi	Hemiptera	29	Sunnucks, P., Chisholm, D., Turak, E., & Hales, D. F. (1998). Evolution of an ecological trait in parthenogenetic Sitobion aphids. Heredity, 81(6), 638-647.
Pseudopleuronectes americanus	Atheriniformes	29.1	Brett, J. R. (1970). in Marine Ecology, Vol. 1, Environmental Factors, ed. Kinne O (Wiley-Interscience, Chichester), pp. 515–616.
Neobatrachus pictus	Anura	29.3	Johnson, C. R. (1972). Diel variation in the thermal tolerance of Litoria gracilenta (Anura: Hylidae). Comparative Biochemistry and Physiology Part A: Physiology, 41(4), 727-730.
Macoma balthica	Veneroida	29.4	Compton, T. J., Rijkenberg, M. J. A., Drent, J., & Piersma, T. (2007). Thermal tolerance ranges and climate variability: A comparison between bivalves from differing climates. J. Exp. Mar. Biol. Ecol., 352, 200-211.

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
Antarctopsocus jeanneli	Psocoptera	29.5	Slabber, S., & Chown, S. L. (2004). Thermal tolerance and cold hardiness strategy of the sub-Antarctic psocid Antarctopsocus jeanneli Badonnel. Polar Biol., 28, 56-61.
Crinia victoriana	Anura	29.5	Johnson, C. R. (1972). Diel variation in the thermal tolerance of Litoria gracilenta (Anura: Hylidae). Comparative Biochemistry and Physiology Part A: Physiology, 41(4), 727-730.
Paronychiurus kimi	Collembola	29.54	Garg, A. K., Kim, J. K., Owens, T. G., Ranwala, A. P., Do Choi, Y., Kochian, L. V., & Wu, R. J. (2002). Trehalose accumulation in rice plants confers high tolerance levels to different abiotic stresses. Proceedings of the National Academy of Sciences, 99(25), 15898-15903.
Littorina obtusata	Neotaenioglossa	29.6	Davenport, J., & Davenport, J. L. (2005). Effects of shore height, wave exposure and geographical distance on thermal niche width of intertidal fauna. Mar. Ecol. Prog. Ser., 292, 41-50.
Littorina fabalis	Neotaenioglossa	29.9	Davenport, J., Barnett, P. R. O., & McAllen, R. J. (1997). Environmental tolerances of three species of the harpacticoid copepod genus Tigriopus. J. Mar. Biol. Assoc. U.K., 77, 3-16.
Drosophila curviceps	Diptera	30	Ohtsu, T., Katagiri, C., & Kimura, M. T. (1999). Biochemical aspects of climatic adaptations in Drosophila curviceps, D. immigrans, and D. albomicans (Diptera : Drosophilidae). Environ. Entomol., 28, 968-972.

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
Tautogolabrus adspersus	Perciformes	30	Brett, J. R. (1970). in Marine Ecology, Vol. 1, Environmental Factors, ed. Kinne O (Wiley-Interscience, Chichester), pp. 515–616.
Hyla phyllochroa	Anura	30	Johnson, C. R. (1972). Diel variation in the thermal tolerance of Litoria gracilenta (Anura: Hylidae). Comparative Biochemistry and Physiology Part A: Physiology, 41(4), 727-730.
Thrips tabaci	Thysanoptera	30.025	Yamauchi, N., Natsubori, Y., & Murae, T. (2000). Practical synthesis of [3-(2H3) methyl] mevalonolactone and incorporation experiment of [3-(2H3) methyl] mevalonolactone and [13C] labeled acetate in the biosynthesis of isoprenoidal diether lipids of halophilic archaea. Bulletin of the Chemical Society of Japan, 73(11), 2513-2519.
Paractora dreuxi	Diptera	30.2	Klok, C. J., & Chown, S. L. (2001). Critical thermal limits, temperature tolerance and water balance of a sub-Antarctic kelp fly, Paractora dreuxi (Diptera: Helcomyzidae). Journal of Insect Physiology, 47, 95-109.
Aphis citricola	Hemiptera	30.225	Komazaki, S. (1982). Effects of constant temperatures on population growth of three aphid species, Toxoptera citricidus (Kirkaldy), Aphis citricola van der Goot and Aphis gossypii Glover (Homoptera: Aphididae) on citrus. Applied Entomology and Zoology, 17(1), 75-81.
Mytilus edulis	Mytiloida	30.5	Davenport, J., & Davenport, J. L. (2005). Effects of shore height, wave exposure and geographical

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
			distance on thermal niche width of intertidal fauna. Mar. Ecol. Prog. Ser., 292, 41-50.
Crinia parainsignifera	Anura	30.5	Johnson, C. R. (1972). Diel variation in the thermal tolerance of Litoria gracilenta (Anura: Hylidae). Comparative Biochemistry and Physiology Part A: Physiology, 41(4), 727-730.
Myxophyes fasciolatus	Anura	30.5	Johnson, C. R. (1972). Diel variation in the thermal tolerance of Litoria gracilenta (Anura: Hylidae). Comparative Biochemistry and Physiology Part A: Physiology, 41(4), 727-730.
Philoria loveridgei	Anura	30.5	Johnson, C. R. (1972). Diel variation in the thermal tolerance of Litoria gracilenta (Anura: Hylidae). Comparative Biochemistry and Physiology Part A: Physiology, 41(4), 727-730.
Pterohalaeus alternatus	Coleoptera	30.55	Allsopp, P. G. (1981). Development, Longevity and Fecundity of the False Wireworms Pterohelaeus Darlingensis and P. Alternatus (Coleoptera: Tenebrionidae). I. Effect of Constant Temperature. Australian Journal of Zoology, 29(4), 605-619.
Palirhoes eatoni	Coleoptera	30.7	Klok, C. J., & Chown, S. L. (2003). Resistance to temperature extremes in sub-Antarctic weevils: interspecific variation, population differentiation and acclimation Biological Journal of the Linnean Society, 78, 401-414.

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
Hyla citropa	Anura	30.7	Johnson, C. R. (1972). Diel variation in the thermal tolerance of Litoria gracilenta (Anura: Hylidae). Comparative Biochemistry and Physiology Part A: Physiology, 41(4), 727-730.
Toxoptera citricidus aurantium	Hemiptera	30.92	Komazaki, S. (1982). Effects of constant temperatures on population growth of three aphid species, Toxoptera citricidus (Kirkaldy), Aphis citricola van der Goot and Aphis gossypii Glover (Homoptera: Aphididae) on citrus. Applied Entomology and Zoology, 17(1), 75-81.
Drosophila lacertosa	Diptera	31	Kimura, M. T. (2004). Cold and heat tolerance of drosophilid flies with reference to their latitudinal distributions. Oecologia, 140, 442-449.
Bothrometopus elongatus	Coleoptera	31	VanderMerwe, M., Chown, S. L., & Smith, V. R. (1997). Thermal tolerance limits in six weevil species (Coleoptera, Curculionidae) from sub-Antarctic Marion Island. Polar Biol., 18, 331-336.
Bothrometopus randi	Coleoptera	31	VanderMerwe, M., Chown, S. L., & Smith, V. R. (1997). Thermal tolerance limits in six weevil species (Coleoptera, Curculionidae) from sub-Antarctic Marion Island. Polar Biol., 18, 331-336.
Crinia darlingtoni	Anura	31	Johnson, C. R. (1972). Diel variation in the thermal tolerance of Litoria gracilenta (Anura: Hylidae). Comparative Biochemistry and Physiology Part A: Physiology, 41(4), 727-730.

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
Drosophila lutescens	Diptera	31.1	Kimura, M. T. (2004). Cold and heat tolerance of drosophilid flies with reference to their latitudinal distributions. Oecologia, 140, 442-449.
Adelotus brevis	Anura	31.2	Johnson, C. R. (1972). Diel variation in the thermal tolerance of Litoria gracilenta (Anura: Hylidae). Comparative Biochemistry and Physiology Part A: Physiology, 41(4), 727-730.
Hyla freycineti	Anura	31.3	Johnson, C. R. (1972). Diel variation in the thermal tolerance of Litoria gracilenta (Anura: Hylidae). Comparative Biochemistry and Physiology Part A: Physiology, 41(4), 727-730.
Rana palustris	Anura	31.3	Brattstrom, B. H. (1968). Thermal acclimation in anuran amphibians as a function of latitude and altitude. Comparative Biochemistry and Physiology, 24(1), 93-111.
Craugastor fleischmanni	Anura	31.4	Brattstrom, B. H. (1968). Thermal acclimation in anuran amphibians as a function of latitude and altitude. Comp. Biochem. Physiol., 24, 93-111.
Drosophila sternopleuralis	Diptera	31.4	Kimura, M. T. (2004). Cold and heat tolerance of drosophilid flies with reference to their latitudinal distributions. Oecologia, 140, 442-449.
Girella nigricans	Perciformes	31.4	Brett, J. R. (1970). in Marine Ecology, Vol. 1, Environmental Factors, ed. Kinne O (Wiley-Interscience, Chichester), pp. 515–616.
Eleutherodactylus fleischmanni	Anura	31.4	Brattstrom, B. H. (1968). Thermal acclimation in anuran amphibians as a function of latitude and

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
			altitude. Comparative Biochemistry and Physiology, 24(1), 93-111.
Desmognathus quadramaculatus	Caudata	31.4	Tilley, S. G., & Tinkle, D. W. (1968). A reinterpretation of the reproductive cycle and demography of the salamander Desmognathus ochrophaeus. Copeia, 1968(2), 299-303.
Diatraea lineolata	Lepidoptera	31.4	Rodríguez del Bosque, I., Vázquez, R., & Trespalacios, J. A. (1992). Evolución de la imagen bancaria. Revista Europea de Dirección y Economía de la Empresa, 1(2), 33-46.
Drosophila immigrans	Diptera	31.5	Ohtsu, T., Katagiri, C., & Kimura, M. T. (1999). Biochemical aspects of climatic adaptations in Drosophila curviceps, D. immigrans, and D. albomicans (Diptera : Drosophilidae). Environ. Entomol., 28, 968-972.
Desmognathus ochrophaeus	Caudata	31.5	Tilley, S. G., & Tinkle, D. W. (1968). A reinterpretation of the reproductive cycle and demography of the salamander Desmognathus ochrophaeus. Copeia, 1968(2), 299-303.
Atherinops affinis	Atheriniformes	31.7	Brett, J. R. (1970). in Marine Ecology, Vol. 1, Environmental Factors, ed. Kinne O (Wiley-Interscience, Chichester), pp. 515–616.
Ceratitis capitata	Diptera	31.78	Vargas, R. I., Walsh, W. A., Kanehisa, D., Stark, J. D., & Nishida, T. (2000). Comparative demography of three Hawaiian fruit flies (Diptera: Tephritidae) at alternating temperatures. Annals of the Entomological Society of America, 93(1), 75-81.

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
Cryptopygus cisantarcticus	Collembola	31.8	Sinclair, B. J., et al. (2006). Environmental physiology of three species of Collembola at Cape Hallett, North Victoria Land, Antarctica. J. Insect Physiol., 52, 29-50.
Kerguelenella lateralis	Basommatophora	31.8	Davenport, J. (1997). Comparisons of the biology of the intertidal subantarctic limpets Nacella concinna and Kerguelenella lateralis. J. Molluscan Stud., 63, 39-48.
Drosophila orientacea	Diptera	31.9	Kimura, M. T. (2004). Cold and heat tolerance of drosophilid flies with reference to their latitudinal distributions. Oecologia, 140, 442-449.
Diaphorina citri	Hemiptera	31.96	Irwin, M., Marin, M. C., Phillips, A. C., Seelan, R. S., Smith, D. I., Liu, W., ... & Kaelin Jr, W. G. (2000). Role for the p53 homologue p73 in E2F-1-induced apoptosis. Nature, 407(6804), 645-648
Drosophila neotestacea	Diptera	32	Berrigan, D. (2000). Correlations between measures of thermal stress resistance within and between species. Oikos, 89, 301-304.
Bothrometopus parvulus	Coleoptera	32	VanderMerwe, M., Chown, S. L., & Smith, V. R. (1997). Thermal tolerance limits in six weevil species (Coleoptera, Curculionidae) from sub-Antarctic Marion Island. Polar Biol., 18, 331-336.
Palirhoeus eatoni	Coleoptera	32	VanderMerwe, M., Chown, S. L., & Smith, V. R. (1997). Thermal tolerance limits in six weevil species (Coleoptera, Curculionidae) from sub-Antarctic Marion Island. Polar Biol., 18, 331-336.

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
Hyla verreauxi	Anura	32	Johnson, C. R. (1972). Diel variation in the thermal tolerance of Litoria gracilenta (Anura: Hylidae). Comparative Biochemistry and Physiology Part A: Physiology, 41(4), 727-730.
Drosophila ruberrima	Diptera	32.1	Kimura, M. T. (2004). Cold and heat tolerance of drosophilid flies with reference to their latitudinal distributions. Oecologia, 140, 442-449.
Hyadaphis pseudobrassicae	Hemiptera	32.1	Wyatt, I. J., & White, P. F. (1977). Simple estimation of intrinsic increase rates for aphids and tetranychid mites. Journal of Applied Ecology, 14(3), 757-766.
Cerastoderma edule	Veneroida	32.2	Compton, T. J., Rijkenberg, M. J. A., Drent, J., & Piersma, T. (2007). Thermal tolerance ranges and climate variability: A comparison between bivalves from differing climates. J. Exp. Mar. Biol. Ecol., 352, 200-211.
Macrolophus pygmaeus	Hemiptera	32.28	Perdikis, D. C., & Lykouressis, D. P. (2002). Life table and biological characteristics of Macrolophus pygmaeus when feeding on Myzus persicae and Trialeurodes vaporariorum. Entomologia Experimentalis et Applicata, 102(3), 261-272.
Halmaeusa atriceps	Coleoptera	32.3	Slabber, S., & Chown, S. L. (2005). Differential responses of thermal tolerance to acclimation in the sub-Antarctic rove beetle Halmaeusa atriceps. Physiological Entomology, 30, 195-204.

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
Drosophila unispina	Diptera	32.3	Kimura, M. T. (2004). Cold and heat tolerance of drosophilid flies with reference to their latitudinal distributions. Oecologia, 140, 442-449.
Hirtodrosophila histrioides	Diptera	32.3	Kimura, M. T. (2004). Cold and heat tolerance of drosophilid flies with reference to their latitudinal distributions. Oecologia, 140, 442-449.
Halmaeusa atriceps	Coleoptera	32.4	Slabber, S., & Chown, S. L. (2004). Thermal tolerance and cold hardiness strategy of the sub-Antarctic psocid Antarctopsocus jeanneli Badonnel. Polar Biol., 28, 56-61.
Drosophila albomicans	Diptera	32.5	Kimura, M. T. (2004). Cold and heat tolerance of drosophilid flies with reference to their latitudinal distributions. Oecologia, 140, 442-449.
Drosophila biauraria	Diptera	32.5	Kimura, M. T. (2004). Cold and heat tolerance of drosophilid flies with reference to their latitudinal distributions. Oecologia, 140, 442-449.
Drosophila lacteicornis	Diptera	32.5	Kimura, M. T. (2004). Cold and heat tolerance of drosophilid flies with reference to their latitudinal distributions. Oecologia, 140, 442-449.
Drosophila takahashii	Diptera	32.5	Kimura, M. T. (2004). Cold and heat tolerance of drosophilid flies with reference to their latitudinal distributions. Oecologia, 140, 442-449.
Menidia menidia	Atheriniformes	32.5	Brett, J. R. (1970). in Marine Ecology, Vol. 1, Environmental Factors, ed. Kinne O (Wiley-Interscience, Chichester), pp. 515–616.

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
Sphoeroides maculatus	Tetraodontiformes	32.5	Brett, J. R. (1970). in Marine Ecology, Vol. 1, Environmental Factors, ed. Kinne O (Wiley-Interscience, Chichester), pp. 515–616.
Drosophila curvispina	Diptera	32.6	Kimura, M. T. (2004). Cold and heat tolerance of drosophilid flies with reference to their latitudinal distributions. Oecologia, 140, 442-449.
Drosophila suzukii	Diptera	32.7	Kimura, M. T. (2004). Cold and heat tolerance of drosophilid flies with reference to their latitudinal distributions. Oecologia, 140, 442-449.
Limnodynastes peroni	Anura	32.7	Johnson, C. R. (1972). Diel variation in the thermal tolerance of Litoria gracilenta (Anura: Hylidae). Comparative Biochemistry and Physiology Part A: Physiology, 41(4), 727-730.
Hyla ewingi	Anura	32.8	Johnson, C. R. (1972). Diel variation in the thermal tolerance of Litoria gracilenta (Anura: Hylidae). Comparative Biochemistry and Physiology Part A: Physiology, 41(4), 727-730.
Rana warszewitschii	Anura	32.8	Brattstrom, B. H. (1968). Thermal acclimation in anuran amphibians as a function of latitude and altitude. Comparative Biochemistry and Physiology, 24(1), 93-111.
Acyrthosiphon pisum	Hemiptera	32.875	Caplen, N. J., Parrish, S., Imani, F., Fire, A., & Morgan, R. A. (2001). Specific inhibition of gene expression by small double-stranded RNAs in invertebrate and vertebrate systems. Proceedings of the National Academy of Sciences, 98(17), 9742-9747.

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
Drosophila bizonata	Diptera	32.9	Kimura, M. T. (2004). Cold and heat tolerance of drosophilid flies with reference to their latitudinal distributions. Oecologia, 140, 442-449.
Drosophila rufa	Diptera	32.9	Kimura, M. T. (2004). Cold and heat tolerance of drosophilid flies with reference to their latitudinal distributions. Oecologia, 140, 442-449.
Hyla alpina	Anura	32.9	Johnson, C. R. (1972). Diel variation in the thermal tolerance of Litoria gracilenta (Anura: Hylidae). Comparative Biochemistry and Physiology Part A: Physiology, 41(4), 727-730.
Drosophila albomicans	Diptera	33	Ohtsu, T., Katagiri, C., & Kimura, M. T. (1999). Biochemical aspects of climatic adaptations in Drosophila curviceps, D. immigrans, and D. albomicans (Diptera : Drosophilidae). Environ. Entomol., 28, 968-972.
Clavigralla shadabi	Hemiptera	33.0677	Dreyer, H., & Baumgärtner, J. (1996). Temperature influence on cohort parameters and demographic characteristics of the two cowpea coreids Clavigralla tomentosicollis and C. shadabi. Entomologia Experimentalis et Applicata, 78(2), 201-213.
Anolis tropidolepis	Squamata	33.1	Van Berkum, F. H. (1988). Latitudinal patterns of the thermal sensitivity of sprint speed in lizards. The American Naturalist, 132(3), 327-343.
Drosophila bocki	Diptera	33.2	Kimura, M. T. (2004). Cold and heat tolerance of drosophilid flies with reference to their latitudinal distributions. Oecologia, 140, 442-449.

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
Cophixalis ornatus	Anura	33.3	Johnson, C. R. (1972). Diel variation in the thermal tolerance of Litoria gracilenta (Anura: Hylidae). Comparative Biochemistry and Physiology Part A: Physiology, 41(4), 727-730.
Drosophila daruma	Diptera	33.4	Kimura, M. T. (2004). Cold and heat tolerance of drosophilid flies with reference to their latitudinal distributions. Oecologia, 140, 442-449.
Abra tenuis	Veneroida	33.4	Compton, T. J., Rijkenberg, M. J. A., Drent, J., & Piersma, T. (2007). Thermal tolerance ranges and climate variability: A comparison between bivalves from differing climates. J. Exp. Mar. Biol. Ecol., 352, 200-211.
Limnodynastes tasmaniensis	Anura	33.4	Johnson, C. R. (1972). Diel variation in the thermal tolerance of Litoria gracilenta (Anura: Hylidae). Comparative Biochemistry and Physiology Part A: Physiology, 41(4), 727-730.
Stethorus punctillum	Coleoptera	33.46	Waters, J. M., & Roy, M. S. (2003). Marine biogeography of southern Australia: phylogeographical structure in a temperate sea-star. Journal of Biogeography, 30(12), 1787-1796.
Ectemnorhinus viridis	Coleoptera	33.5	Klok, C. J., & Chown, S. L. (2003). Resistance to temperature extremes in sub-Antarctic weevils: interspecific variation, population differentiation and acclimation Biological Journal of the Linnean Society, 78, 401-414.

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
Drosophila bipectinata	Diptera	33.5	Kimura, M. T. (2004). Cold and heat tolerance of drosophilid flies with reference to their latitudinal distributions. Oecologia, 140, 442-449.
Drosophila ficusphila	Diptera	33.5	Kimura, M. T. (2004). Cold and heat tolerance of drosophilid flies with reference to their latitudinal distributions. Oecologia, 140, 442-449.
Siliqua sp	Veneroida	33.5	Compton, T. J., Rijkenberg, M. J. A., Drent, J., & Piersma, T. (2007). Thermal tolerance ranges and climate variability: A comparison between bivalves from differing climates. J. Exp. Mar. Biol. Ecol., 352, 200-211.
Crinia laevis	Anura	33.5	Johnson, C. R. (1972). Diel variation in the thermal tolerance of Litoria gracilenta (Anura: Hylidae). Comparative Biochemistry and Physiology Part A: Physiology, 41(4), 727-730.
Rhopalosiphum rufiabdominalis	Hemiptera	33.52	Tsai, J. H., & Liu, Y. H. (1998). Effect of temperature on development, survivorship, and reproduction of rice root aphid (Homoptera: Aphididae). Environmental Entomology, 27(3), 662-666.
Rana cascadae	Anura	33.6	Brattstrom, B. H. (1968). Thermal acclimation in anuran amphibians as a function of latitude and altitude. Comp. Biochem. Physiol., 24, 93-111.
Drosophila brachynephros	Diptera	33.6	Kimura, M. T. (2004). Cold and heat tolerance of drosophilid flies with reference to their latitudinal distributions. Oecologia, 140, 442-449.

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
Drosophila elegans	Diptera	33.6	Kimura, M. T. (2004). Cold and heat tolerance of drosophilid flies with reference to their latitudinal distributions. Oecologia, 140, 442-449.
Hemigrapsus nudus	DecapodaGrapsoidea	33.6	McGaw, I. J. (2003). Behavioral thermoregulation in Hemigrapsus nudus, the amphibious purple shore crab. Biological Bulletin, 204, 38-49.
Rana cascadae	Anura	33.6	Brattstrom, B. H. (1968). Thermal acclimation in anuran amphibians as a function of latitude and altitude. Comparative Biochemistry and Physiology, 24(1), 93-111.
Rana catesbeiana	Anura	33.6	Brattstrom, B. H. (1968). Thermal acclimation in anuran amphibians as a function of latitude and altitude. Comparative Biochemistry and Physiology, 24(1), 93-111.
Cyclorana alboguttatus	Anura	33.8	Johnson, C. R. (1972). Diel variation in the thermal tolerance of Litoria gracilenta (Anura: Hylidae). Comparative Biochemistry and Physiology Part A: Physiology, 41(4), 727-730.
Drosophila auraria	Diptera	33.9	Kimura, M. T. (2004). Cold and heat tolerance of drosophilid flies with reference to their latitudinal distributions. Oecologia, 140, 442-449.
Drosophila quadrilineata	Diptera	33.9	Kimura, M. T. (2004). Cold and heat tolerance of drosophilid flies with reference to their latitudinal distributions. Oecologia, 140, 442-449.
Scaptodrosophila pallida	Diptera	33.9	Kimura, M. T. (2004). Cold and heat tolerance of drosophilid flies with reference to their latitudinal distributions. Oecologia, 140, 442-449.

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
Ectemnorhinus viridis	Coleoptera	33.9	Klok, C. J., & Chown, S. L. (2003). Resistance to temperature extremes in sub-Antarctic weevils: interspecific variation, population differentiation and acclimation. Biol. J. Linn. Soc., 78, 401-414.
Rana sylvaticus	Anura	33.9	Manis, M. L., & Claussen, D, L. (1986). Environmental and genetic influences on the thermal physiology of Rana syvatica. J. Therm. Biol., 11, 31-36.
Ectemnorhinus marioni	Coleoptera	34	VanderMerwe, M., Chown, S. L., & Smith, V. R. (1997). Thermal tolerance limits in six weevil species (Coleoptera, Curculionidae) from sub-Antarctic Marion Island. Polar Biol., 18, 331-336.
Ectemnorhinus similis	Coleoptera	34	VanderMerwe, M., Chown, S. L., & Smith, V. R. (1997). Thermal tolerance limits in six weevil species (Coleoptera, Curculionidae) from sub-Antarctic Marion Island. Polar Biol., 18, 331-336.
Rana boyleri	Anura	34	Brattstrom, B. H. (1968). Thermal acclimation in anuran amphibians as a function of latitude and altitude. Comparative Biochemistry and Physiology, 24(1), 93-111.
Spea holbrooki	Anura	34	Brattstrom, B. H. (1968). Thermal acclimation in anuran amphibians as a function of latitude and altitude. Comparative Biochemistry and Physiology, 24(1), 93-111.
Ambystoma jeffersonianum	Caudata	34	Gatz Jr, A. J. (1971). Critical thermal maxima of Ambystoma maculatum (Shaw) and Ambystoma jeffersonianum (Green) in relation to time of breeding. Herpetologica, 27(2), 157-160.

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
Eriosoma lanigerum	Hemiptera	34.075	Asante, S. K., Danthanarayana, W., & Heatwole, H. (1991). Bionomics and population growth statistics of apterous virginoparae of woolly apple aphid, Eriosoma lanigerum, at constant temperatures. Entomologia Experimentalis et Applicata, 60(3), 261-270.
Scaptodrosophila dorsocentralis	Diptera	34.2	Kimura, M. T. (2004). Cold and heat tolerance of drosophilid flies with reference to their latitudinal distributions. Oecologia, 140, 442-449.
Drosophila nigromaculata	Diptera	34.3	Kimura, M. T. (2004). Cold and heat tolerance of drosophilid flies with reference to their latitudinal distributions. Oecologia, 140, 442-449.
Drosophila recens	Diptera	34.4	Berrigan, D. (2000). Correlations between measures of thermal stress resistance within and between species. Oikos, 89, 301-304.
Drosophila angularis	Diptera	34.4	Kimura, M. T. (2004). Cold and heat tolerance of drosophilid flies with reference to their latitudinal distributions. Oecologia, 140, 442-449.
Bothrometopus brevis	Coleoptera	34.4	Klok, C. J., & Chown, S. L. (2003). Resistance to temperature extremes in sub-Antarctic weevils: interspecific variation, population differentiation and acclimation. Biol. J. Linn. Soc., 78, 401-414.
Ambystoma macrodactylum	Caudata	34.4	Howard, J. H., Wallace, R. L., & Stauffer, J. R. (1983). Critical thermal maxima in populations of Ambystoma macrodactylum from different elevations. Journal of Herpetology, 17(4), 400-402.

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
Scaptodrosophila coracina	Diptera	34.5	Kimura, M. T. (2004). Cold and heat tolerance of drosophilid flies with reference to their latitudinal distributions. Oecologia, 140, 442-449.
Isotoma klovstadi	Collembola	34.5	Sinclair, B. J., et al. (2006). Environmental physiology of three species of Collembola at Cape Hallett, North Victoria Land, Antarctica. J. Insect Physiol., 52, 29-50.
Hyla lesueuri	Anura	34.5	Johnson, C. R. (1972). Diel variation in the thermal tolerance of Litoria gracilenta (Anura: Hylidae). Comparative Biochemistry and Physiology Part A: Physiology, 41(4), 727-730.
Plethodon glutinosus	Caudata	34.5	Elwood, J. R. L. (2003). Variation in hsp70 levels and thermotolerance among terrestrial salamanders of the Plethodon glutinosus complex (Doctoral dissertation, PhD Thesis, Drexel University, Philadelphia, Pennsylvania).
Pterohelaeus darlingensis	Coleoptera	34.54	Allsopp, P. G. (1981). Development, Longevity and Fecundity of the False Wireworms Pterohelaeus Darlingensis and P. Alternatus (Coleoptera: Tenebrionidae). I. Effect of Constant Temperature. Australian Journal of Zoology, 29(4), 605-619.
Apetaenus litoralis	Diptera	34.6	Klok, C. J., & Chown, S. L. (2000). Lack of cold tolerance in a small, brachypterous sub-Antarctic fly, *Apetaenus litoralis* Eaton (Diptera: Tethinidae), from Marion Island. African Entomology, 8, 305-308.

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
Bothrometopus brevis	Coleoptera	34.6	Klok, C. J., & Chown, S. L. (2003). Resistance to temperature extremes in sub-Antarctic weevils: interspecific variation, population differentiation and acclimation Biological Journal of the Linnean Society, 78, 401-414.
Cotesia flavipes	Hymenoptera	34.625	Mbapila, J. C., & Overholt, W. A. (2001). Comparative development, longevity and population growth of exotic and native parasitoids of lepidopteran cereal stemborers in Kenya. Bulletin of Entomological Research, 91(5), 347-353.
Drosophila putrida	Diptera	34.7	Berrigan, D. (2000). Correlations between measures of thermal stress resistance within and between species. Oikos, 89, 301-304.
Apogon pacifici	Perciformes	34.7	Mora, C., & Ospina, A. F. (2001). Tolerance to high temperatures and potential impact of sea warming on reef fishes of Gorgona Island (tropical eastern Pacific). Mar. Biol., 139, 765-769. Mora, C., & Ospina, A. F. (2002). Experimental effect of cold, La Nina temperatures on the survival of reef fishes from Gorgona Island (eastern Pacific Ocean). Mar. Biol., 141, 789-793.
Saccharicoccus sacchari	Hemiptera	34.78	Huey, R. B., & Berrigan, D. (2001). Temperature, demography, and ectotherm fitness. The American Naturalist, 158(2), 204-210.

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
Dendrobates auratus	Anura	34.8	Brattstrom, B. H. (1968). Thermal acclimation in anuran amphibians as a function of latitude and altitude. Comp. Biochem. Physiol., 24, 93-111.
Rana pretiosa	Anura	34.8	Brattstrom, B. H. (1968). Thermal acclimation in anuran amphibians as a function of latitude and altitude. Comp. Biochem. Physiol., 24, 93-111.
Dendrobates auratus	Anura	34.8	Brattstrom, B. H. (1968). Thermal acclimation in anuran amphibians as a function of latitude and altitude. Comparative Biochemistry and Physiology, 24(1), 93-111.
Pseudophryne bibroni	Anura	34.8	Johnson, C. R. (1972). Diel variation in the thermal tolerance of Litoria gracilenta (Anura: Hylidae). Comparative Biochemistry and Physiology Part A: Physiology, 41(4), 727-730.
Pseudophryne dendyi	Anura	34.8	Johnson, C. R. (1972). Diel variation in the thermal tolerance of Litoria gracilenta (Anura: Hylidae). Comparative Biochemistry and Physiology Part A: Physiology, 41(4), 727-730.
Semibalanus balanoides	Sessilia	34.9	Davenport, J., & Davenport, J. L. (2005). Effects of shore height, wave exposure and geographical distance on thermal niche width of intertidal fauna. Mar. Ecol. Prog. Ser., 292, 41-50.
Crinia signifera	Anura	34.9	Johnson, C. R. (1972). Diel variation in the thermal tolerance of Litoria gracilenta (Anura: Hylidae). Comparative Biochemistry and Physiology Part A: Physiology, 41(4), 727-730.

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
Drosophila sulfurigaster	Diptera	35	Christian, K. A., & Morton, S. R. (1992). Extreme thermophilia in a central Australian ant, Melophorus bagoti. Physiological Zoology, 65, 885-905.
Desmognathus fuscus	Caudata	35	Layne, J. R., & Claussen, D. L. (1982). The time courses of CT_{max} and CT_{min} acclimation in the salamander Desmognathus fuscus. J. Therm. Biol., 7, 139-141.
Eurycea bislineata	Caudata	35	Layne, J. R., & Claussen, D. L. (1982). Seasonal variation in the thermal acclimation of critical thermal maxima (CT_{max}) and minima (CT_{min}) in the salamander Eurycea bis CT_{max} lineata. J. Therm. Biol., 7, 29-33.
Littorina saxatilis	Neotaenioglossa	35	Davenport, J., & Davenport, J. L. (2005). Effects of shore height, wave exposure and geographical distance on thermal niche width of intertidal fauna. Mar. Ecol. Prog. Ser., 292, 41-50.
Rana clamitans	Anura	35	Brattstrom, B. H. (1968). Thermal acclimation in anuran amphibians as a function of latitude and altitude. Comparative Biochemistry and Physiology, 24(1), 93-111.
Desmognathus fuscus	Caudata	35	Layne Jr, J. R., & Claussen, D. L. (1982). The time courses of CT_{Max} and CT_{Min} acclimation in the salamander Desmognathus fuscus. Journal of Thermal Biology, 7(3), 139-141.
Eurycea bislineata	Caudata	35	Layne Jr, J. R., & Claussen, D. L. (1982). Seasonal variation in the thermal acclimation of critical thermal maxima (CT_{Max}) and minima (CT_{Min}) in the

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
			salamander Eurycea bislineata. Journal of Thermal Biology, 7(1), 29-33.
Friesea grisea	Collembola	35.1	Sinclair, B. J., et al. (2006). Environmental physiology of three species of Collembola at Cape Hallett, North Victoria Land, Antarctica. J. Insect Physiol., 52, 29-50.
Tigriopus brevicornis	Harpacticoida	35.1	Davenport, J., & Davenport, J. L. (2005). Effects of shore height, wave exposure and geographical distance on thermal niche width of intertidal fauna. Mar. Ecol. Prog. Ser., 292, 41-50.
Chromis atrilobata	Perciformes	35.2	Mora, C., & Ospina, A. F. (2001). Tolerance to high temperatures and potential impact of sea warming on reef fishes of Gorgona Island (tropical eastern Pacific). Mar. Biol., 139, 765-769. Mora, C., & Ospina, A. F. (2002). Experimental effect of cold, La Nina temperatures on the survival of reef fishes from Gorgona Island (eastern Pacific Ocean). Mar. Biol., 141, 789-793.
Pseudophryne corroboree	Anura	35.2	Johnson, C. R. (1972). Diel variation in the thermal tolerance of Litoria gracilenta (Anura: Hylidae). Comparative Biochemistry and Physiology Part A: Physiology, 41(4), 727-730.
Rana pipiens	Anura	35.2	Brattstrom, B. H. (1968). Thermal acclimation in anuran amphibians as a function of latitude and

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
			altitude. Comparative Biochemistry and Physiology, 24(1), 93-111.
Littorina littorea	Neotaenioglossa	35.3	Davenport, J., & Davenport, J. L. (2005). Effects of shore height, wave exposure and geographical distance on thermal niche width of intertidal fauna. Mar. Ecol. Prog. Ser., 292, 41-50.
Plagiotremus azaleus	Perciformes	35.3	Mora, C., & Ospina, A. F. (2001). Tolerance to high temperatures and potential impact of sea warming on reef fishes of Gorgona Island (tropical eastern Pacific). Mar. Biol., 139, 765-769. Mora, C., & Ospina, A. F. (2002). Experimental effect of cold, La Nina temperatures on the survival of reef fishes from Gorgona Island (eastern Pacific Ocean). Mar. Biol., 141, 789-793.
Anolis gundlachi	Squamata	35.4	Huey, R. B., et al. (2009). Why tropical forest lizards are vulnerable to climate warming. Proc. R. Soc. Lond., Ser. B: Biol. Sci., 276, 1939-1948.
Myro kerguelenensis	Araneae	35.4	Jumbam, K. R., et al. (2008). Critical thermal limits and their responses to acclimation in two sub-Antarctic spiders: Myro kerguelenensis and Prinerigone vagans. Polar Biol., 31, 215-220.
Drosophila kanekoi	Diptera	35.4	Kimura, M. T. (2004). Cold and heat tolerance of drosophilid flies with reference to their latitudinal distributions. Oecologia, 140, 442-449.

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
Coryphopterus urospilus	Perciformes	35.4	Mora, C., & Ospina, A. F. (2001). Tolerance to high temperatures and potential impact of sea warming on reef fishes of Gorgona Island (tropical eastern Pacific). Mar. Biol., 139, 765-769. Mora, C., & Ospina, A. F. (2002). Experimental effect of cold, La Nina temperatures on the survival of reef fishes from Gorgona Island (eastern Pacific Ocean). Mar. Biol., 141, 789-793.
Paractora dreuxi	Diptera	35.5	Cooper, N., Jetz, W. & Freckleton, R.P. (2010). Phylogenetic comparative approaches for studying niche conservatism. Journal of Evolutionary Biology, 23, 2529–2539.
Scaptodrosophila bryani	Diptera	35.5	Kimura, M. T. (2004). Cold and heat tolerance of drosophilid flies with reference to their latitudinal distributions. Oecologia, 140, 442-449.
Paractora dreuxi	Diptera	35.5	Klok, C. J., & Chown, S. L. (2001). Critical thermal limits, temperature tolerance and water balance of a sub-Antarctic kelp fly, Paractora dreuxi (Diptera : Helcomyzidae). J. Insect Physiol., 47, 95-109.
Anolis humilis	Squamata	35.6	Van Berkum, F. H. (1988). Latitudinal patterns of the thermal sensitivity of sprint speed in lizards. The American Naturalist, 132(3), 327-343.
Cyprinodon dearborni	Cyprinodontiformes	35.7	Brett, J. R. (1970). in Marine Ecology, Vol. 1, Environmental Factors, ed. Kinne O (Wiley-Interscience, Chichester), pp. 515–616.

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
Anolis gundlachi	Squamata	35.7	Huey, R. B., & Webster, T. P. (1976). Thermal biology of Anolis lizards in a complex fauna: the Christatellus group on Puerto Rico. Ecology, 57(5), 985-994.
Rivulus marmoratus	Cyprinodontiformes	35.7	Brett, J. R. (1970). in Marine Ecology, Vol. 1, Environmental Factors, ed. Kinne O (Wiley-Interscience, Chichester), pp. 515–616.
Cirrhitichthys oxycephalus	Perciformes	35.8	Mora, C., & Ospina, A. F. (2001). Tolerance to high temperatures and potential impact of sea warming on reef fishes of Gorgona Island (tropical eastern Pacific). Mar. Biol., 139, 765-769. Mora, C., & Ospina, A. F. (2002). Experimental effect of cold, La Nina temperatures on the survival of reef fishes from Gorgona Island (eastern Pacific Ocean). Mar. Biol., 141, 789-793.
Halichoeres dispilus	Perciformes	35.8	Mora, C., & Ospina, A. F. (2001). Tolerance to high temperatures and potential impact of sea warming on reef fishes of Gorgona Island (tropical eastern Pacific). Mar. Biol., 139, 765-769. Mora, C., & Ospina, A. F. (2002). Experimental effect of cold, La Nina temperatures on the survival of reef fishes from Gorgona Island (eastern Pacific Ocean). Mar. Biol., 141, 789-793.

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
Callosobruchus rhodesianus	Coleoptera	35.8	Giga, D. P., & Smith, R. H. (1983). Comparative life history studies of four Callosobruchus species infesting cowpeas with special reference to Callosobruchus rhodesianus (Pic) (Coleoptera: Bruchidae). Journal of Stored Products Research, 19(4), 189-198.
Prinerigone vagans	Araneae	35.9	Jumbam, K. R., et al. (2008). Critical thermal limits and their responses to acclimation in two sub-Antarctic spiders: Myro kerguelenensis and Prinerigone vagans. Polar Biol., 31, 215-220.
Apogon dovii	Perciformes	35.9	Mora, C., & Ospina, A. F. (2001). Tolerance to high temperatures and potential impact of sea warming on reef fishes of Gorgona Island (tropical eastern Pacific). Mar. Biol., 139, 765-769. Mora, C., & Ospina, A. F. (2002). Experimental effect of cold, La Nina temperatures on the survival of reef fishes from Gorgona Island (eastern Pacific Ocean). Mar. Biol., 141, 789-793.
Dactylopius austrinus	Hemiptera	35.94	Hosking, J. R. (1984). The effect of temperature on the population growth potential of Dactylopius austrinus De Lotto (Homoptera: Dactylopiidae), on Opuntia aurantiaca Lindley. Australian Journal of Entomology, 23(2), 133-139.
Aphis gossypii 6	Hemiptera	35.95	CUI, J., & XIA, J. (1999). Studies on the Resistance Dynamic of the Bt Transgenic Cotton on Cotton Bollworm [J]. Acta Gossypii Sinica, 3, 1-9

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
Lasius nearcticus	Hymenoptera	36	Diamond, S. E., Sorger, M. D., Hulcr, J., Pelini, S. L., Del Toro, I., Hirsch, C., Oberg, E., & Dunn, R. R. (2012). Who likes it hot? A global analysis of the climatic, ecological, and evolutionary determinants of warming tolerance in ants. Global Change Biology, 18, 448-456.
Thalassoma lucasanum	Perciformes	36	Mora, C., & Ospina, A. F. (2001). Tolerance to high temperatures and potential impact of sea warming on reef fishes of Gorgona Island (tropical eastern Pacific). Mar. Biol., 139, 765-769. Mora, C., & Ospina, A. F. (2002). Experimental effect of cold, La Nina temperatures on the survival of reef fishes from Gorgona Island (eastern Pacific Ocean). Mar. Biol., 141, 789-793.
Rana sylvaticus	Anura	36	Manis, M. (1986). Environmental and genetic influences on the thermal physiology of rana sylvatica (michigan, new york, kentucky, maryland).
Canonopsis sericeus	Coleoptera	36.1	Klok, C. J., & Chown, S. L. (2003). Resistance to temperature extremes in sub-Antarctic weevils: interspecific variation, population differentiation and acclimation. Biological Journal of the Linnean Society, 78, 401-414.
Muscidifurax raptorellus	Hymenoptera	36.15	Wever, L. A., Lysyk, T. J., & Clapperton, M. J. (2001). The influence of soil moisture and temperature on the survival, aestivation, growth and development of

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
			juvenile Aporrectodea tuberculata (Eisen)(Lumbricidae). Pedobiologia, 45(2), 121-133.
Cotesia plutellae	Hymenoptera	36.175	Liu, S. S., Wang, X. G., Guo, S. J., He, J. H., & Shi, Z. H. (2000). Seasonal abundance of the parasitoid complex associated with the diamondback moth, Plutella xylostella (Lepidoptera: Plutellidae) in Hangzhou, China. Bulletin of Entomological Research, 90(3), 221-231.
Barbatia pistachia	Pteriomorpha	36.2	Compton, T. J., Rijkenberg, M. J. A., Drent, J., & Piersma, T. (2007). Thermal tolerance ranges and climate variability: A comparison between bivalves from differing climates. J. Exp. Mar. Biol. Ecol., 352, 200-211.
Bufo nelsoni	Anura	36.2	Brattstrom, B. H. (1968). Thermal acclimation in anuran amphibians as a function of latitude and altitude. Comparative Biochemistry and Physiology, 24(1), 93-111.
Hyla aurea	Anura	36.2	Johnson, C. R. (1972). Diel variation in the thermal tolerance of Litoria gracilenta (Anura: Hylidae). Comparative Biochemistry and Physiology Part A: Physiology, 41(4), 727-730.
Hyla peroni	Anura	36.2	Johnson, C. R. (1972). Diel variation in the thermal tolerance of Litoria gracilenta (Anura: Hylidae). Comparative Biochemistry and Physiology Part A: Physiology, 41(4), 727-730.

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
Bactrocera dorsalis a	Diptera	36.2	Yang, R. J., & Chen, C. J. (1996). Stress-based topology optimization. Structural Optimization, 12(2-3), 98-105.
Drosophila busckii	Diptera	36.3	Mitchell, K. A., & Hoffmann, A. A. (2010). Thermal ramping rate influences evolutionary potential and species differences for upper thermal limits in Drosophila. Functional Ecology, 24, 694-700.
Sphaerodactylus klauberi	Squamata	36.3	Huey, R. B., et al. (2009). Why tropical forest lizards are vulnerable to climate warming. Proc. R. Soc. Lond., Ser. B: Biol. Sci., 276, 1939-1948.
Anodontia bullula	Veneroida	36.3	Compton, T. J., Rijkenberg, M. J. A., Drent, J., & Piersma, T. (2007). Thermal tolerance ranges and climate variability: A comparison between bivalves from differing climates. J. Exp. Mar. Biol. Ecol., 352, 200-211.
Tellina sp	Veneroida	36.3	Compton, T. J., Rijkenberg, M. J. A., Drent, J., & Piersma, T. (2007). Thermal tolerance ranges and climate variability: A comparison between bivalves from differing climates. J. Exp. Mar. Biol. Ecol., 352, 200-211.
Eleutherodactylus portoricensus	Anura	36.3	Christian, K. A., Nunez, F., Clos, L., & Diaz, L. (1988). Thermal relations of some tropical frogs along an altitudinal gradient. Biotropica, 20(3), 236-239.
Sphaerodactylus klauberi	Squamata	36.3	Alvarez-Perez, H. J. (1992). Thermal characteristics of Sphaerodactylus species in Puerto Rico and their implications for the distribution of the species

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
			in Puerto Rico (Doctoral dissertation, Universidad de Puerto Rico).
Stomoxys calcitrans	Diptera	36.44	Lysyk, T. J. (1998). Relationships between temperature and life-history parameters of Stomoxys calcitrans (Diptera: Muscidae). Journal of Medical Entomology, 35(2), 107-119.
Bemisia argentifolia	Hemiptera	36.475	Wang, K., & Tsai, J. H. (1996). Temperature effect on development and reproduction of silverleaf whitefly (Homoptera: Aleyrodidae). Annals of the Entomological Society of America, 89(3), 375-384.
Drosophila sulfurigaster	Diptera	36.5	Overgaard, J., Kristensen, T. N., Mitchell, K. A., & Hoffmann, A. A. (2011). Thermal tolerance in widespread and tropical Drosophila species: Does phenotypic plasticity increase with latitude? The American Naturalist, 178, S80-S96.
Fundulus parvipinnis	Cyprinodontiformes	36.5	Brett, J. R. (1970). in Marine Ecology, Vol. 1, Environmental Factors, ed. Kinne O (Wiley-Interscience, Chichester), pp. 515–616.
Bufo boreas	Anura	36.5	Brattstrom, B. H. (1968). Thermal acclimation in anuran amphibians as a function of latitude and altitude. Comparative Biochemistry and Physiology, 24(1), 93-111.
Limnodynastes dorsalis	Anura	36.5	Johnson, C. R. (1972). Diel variation in the thermal tolerance of Litoria gracilenta (Anura: Hylidae). Comparative Biochemistry and Physiology Part A: Physiology, 41(4), 727-730.

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
Bothrometopus randi	Coleoptera	36.6	Klok, C. J., & Chown, S. L. (2003). Resistance to temperature extremes in sub-Antarctic weevils: interspecific variation, population differentiation and acclimation. Biological Journal of the Linnean Society, 78, 401-414.
Drosophila simulans	Diptera	36.6	Mitchell, K. A. & Hoffmann, A. A. (2010). Thermal ramping rate influences evolutionary potential and species differences for upper thermal limits in Drosophila. Functional Ecology, 24, 694-700.
Pseudacris regilla	Anura	36.6	Brattstrom, B. H. (1968). Thermal acclimation in anuran amphibians as a function of latitude and altitude. Comp. Biochem. Physiol., 24, 93-111.
Cotesia sesamiae	Hymenoptera	36.65	Mbapila, J. C., & Overholt, W. A. (2001). Comparative development, longevity and population growth of exotic and native parasitoids of lepidopteran cereal stemborers in Kenya. Bulletin of Entomological Research, 91(5), 347-353.
Drosophila serrata	Diptera	36.7	Berrigan, D. (2000). Correlations between measures of thermal stress resistance within and between species. Oikos, 89, 301-304.
Trachymyrmex smithi neomexicanus	Hymenoptera	36.7	Schumacher, A., & Whitford, W. G. (1974). The foraging ecology of two species of Chihuahuan desert ants: Formica perpilosa andTrachyrmyrmex smithi neomexicanus (Hymenoptera Formicidae). Insectes Sociaux, 21(3), 317-330.

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
Anolis lionotus	Squamata	36.7	Van Berkum, F. H. (1988). Latitudinal patterns of the thermal sensitivity of sprint speed in lizards. The American Naturalist, 132(3), 327-343.
Bothrometopus gracilipes	Coleoptera	36.8	Klok, C. J., & Chown, S. L. (2003). Resistance to temperature extremes in sub-Antarctic weevils: interspecific variation, population differentiation and acclimation. Biological Journal of the Linnean Society, 78, 401-414.
Pseudacris cadaverina	Anura	36.8	Brattstrom, B.H. (1968). Thermal acclimation in anuran amphibians as a function of latitude and altitude. Comp. Biochem. Physiol., 24, 93-111.
Bothrometopus gracilipes	Coleoptera	36.8	Klok, C. J., & Chown, S. L. (2003). Resistance to temperature extremes in sub-Antarctic weevils: interspecific variation, population differentiation and acclimation. Biol. J. Linn. Soc., 78, 401-414.
Anolis limifrons	Squamata	36.8	Van Berkum, F. H. (1988). Latitudinal patterns of the thermal sensitivity of sprint speed in lizards. The American Naturalist, 132(3), 327-343.
Muscidifurax raptor	Hymenoptera	36.84	Lysyk, T. J. (2000). Relationships between temperature and life history parameters of Muscidifurax raptor (Hymenoptera: Pteromalidae). Environmental Entomology, 29(3), 596-605.
Divaricella irpex	Veneroida	36.9	Compton, T. J., Rijkenberg, M. J. A., Drent, J., & Piersma, T. (2007) Thermal tolerance ranges and climate variability: A comparison between bivalves from differing climates. J. Exp. Mar. Biol. Ecol., 352, 200-211.

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
Rana palmipes	Anura	36.9	Brattstrom, B. H. (1968). Thermal acclimation in anuran amphibians as a function of latitude and altitude. Comparative Biochemistry and Physiology, 24(1), 93-111.
Drosophila pseudoananassae	Diptera	37	Mitchell, K. A., & Hoffmann, A. A. (2010). Thermal ramping rate influences evolutionary potential and species differences for upper thermal limits in Drosophila. Functional Ecology, 24, 694-700.
Nannoscincus maccoyi	Squamata	37	Spellerberg (1972). Temperature tolerances of southeast australian reptiles examined in relation to reptile thermoregulatory behavior and distribution. Oecologia, 9, 23-46.
Ectemnorhinus marioni	Coleoptera	37.1	Klok, C. J., & Chown, S. L. (2003). Resistance to temperature extremes in sub-Antarctic weevils: interspecific variation, population differentiation and acclimation. Biological Journal of the Linnean Society, 78, 401-414.
Anolis cristatellus	Squamata	37.1	Huey, R. B. (1983). in Advances in Herpetology and Evolutionary Biology: Essays in Honor of Ernest E. Williams, eds. Rhodin AGJ & Miyata K (Museum of Comparative Zoology, Cambridge, Massachusetts), pp. 484-490.
Bufo exsul	Anura	37.1	Brattstrom, B. H. (1968). Thermal acclimation in anuran amphibians as a function of latitude and altitude. Comparative Biochemistry and Physiology, 24(1), 93-111.

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
Eleutherodactylus coqui	Anura	37.1	Christian, K. A., Nunez, F., Clos, L., & Diaz, L. (1988). Thermal relations of some tropical frogs along an altitudinal gradient. Biotropica, 20(3), 236-239.
Ceratosolen galili	Hymenoptera	37.12	Warren, M., Robertson, M. P., & Greef, J. M. (2010). A comparative approach to understanding factors limiting abundance patterns and distributions in a fig tree-fig wasp mutualism. Ecography, 33, 148-158.
Muscidifurax zaraptor	Hymenoptera	37.14	Wever, L. A., Lysyk, T. J., & Clapperton, M. J. (2001). The influence of soil moisture and temperature on the survival, aestivation, growth and development of juvenile Aporrectodea tuberculata (Eisen)(Lumbricidae). Pedobiologia, 45(2), 121-133.
Drosophila birchii	Diptera	37.2	Mitchell, K. A., & Hoffmann, A. A. (2010). Thermal ramping rate influences evolutionary potential and species differences for upper thermal limits in Drosophila. Functional Ecology, 24, 694-700.
Eleutherodactylus coqui	Anura	37.2	Christian, K. A., Nunez, F., Clos, L., & Diaz, L. (1988). Thermal relations of some tropical frogs along an altitudinal gradient. Biotropica, 20, 236-239.
Haemulon steindachneri	Perciformes	37.2	Mora, C., & Ospina, A. F. (2001). Tolerance to high temperatures and potential impact of sea warming on reef fishes of Gorgona Island (tropical eastern Pacific). Mar. Biol., 139, 765-769. Mora, C., & Ospina, A. F. (2002). Experimental effect of cold, La Nina temperatures on the survival of reef

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
			fishes from Gorgona Island (eastern Pacific Ocean). Mar. Biol., 141, 789-793.
Eurycea lucifuga	Caudata	37.2	Gatz Jr, A. J. (1971). Critical thermal maxima of Ambystoma maculatum (Shaw) and Ambystoma jeffersonianum (Green) in relation to time of breeding. Herpetologica, 27(2), 157-160.
Eurycea nana	Caudata	37.2	Berkhouse, C. S., & Fries, J. N. (1995). Critical thermal maxima of juvenile and adult San Marcos salamanders (Eurycea nana). The Southwestern Naturalist, 40(4), 430-434.
Bothrometopus elongatus	Coleoptera	37.3	Klok, C. J., & Chown, S. L. (2003). Resistance to temperature extremes in sub-Antarctic weevils: interspecific variation, population differentiation and acclimation. Biological Journal of the Linnean Society, 78, 401-414.
Bothrometopus parvulus	Coleoptera	37.3	Klok, C. J., & Chown, S. L. (2003). Resistance to temperature extremes in sub-Antarctic weevils: interspecific variation, population differentiation and acclimation. Biological Journal of the Linnean Society, 78, 401-414.
Anolis lemurinus	Squamata	37.3	Vanberkum, F. H. (1988). Latitudinal patterns of the thermal sensitivity of sprint speed in lizards. Am. Nat., 132, 327-343.

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
Anomalocardia squamosa	Veneroida	37.3	Compton, T. J., Rijkenberg, M. J. A., Drent, J., & Piersma, T. (2007). Thermal tolerance ranges and climate variability: A comparison between bivalves from differing climates. J. Exp. Mar. Biol. Ecol., 352, 200-211.
Bufo canaliferus	Anura	37.3	Brattstrom, B. H. (1968). Thermal acclimation in anuran amphibians as a function of latitude and altitude. Comparative Biochemistry and Physiology, 24(1), 93-111.
Diemictylus viridescens	Caudata	37.3	Tilley, S. G., & Tinkle, D. W. (1968). A reinterpretation of the reproductive cycle and demography of the salamander Desmognathus ochrophaeus. Copeia, 1968(2), 299-303.
Drosophila bipectinata	Diptera	37.4	Mitchell, K. A., & Hoffmann, A. A. (2010). Thermal ramping rate influences evolutionary potential and species differences for upper thermal limits in Drosophila. Functional Ecology, 24, 694-700.
Drosophila bunnanda	Diptera	37.4	Mitchell, K. A., & Hoffmann, A. A. (2010). Thermal ramping rate influences evolutionary potential and species differences for upper thermal limits in Drosophila. Functional Ecology, 24, 694-700.
Agroeca proxima	Araneae	37.4	Almquist, S. (1970). Thermal tolerances and preferences of some dune-living spiders. Oikos, 21, 230-235.
Halozetes marionensis	Acarina	37.4	Deere, J. A., Sinclair, B. J., Marshall, D. J., & Chown, S. L. (2006). Phenotypic plasticity of thermal

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
			tolerances in five oribatid mite species from sub-Antarctic Marion Island. J. Insect Physiol., 52, 693-700.
Lutjanus guttatus	Perciformes	37.4	Mora, C., & Ospina, A. F. (2001). Tolerance to high temperatures and potential impact of sea warming on reef fishes of Gorgona Island (tropical eastern Pacific). Mar. Biol., 139, 765-769. Mora, C., & Ospina, A. F. (2002). Experimental effect of cold, La Nina temperatures on the survival of reef fishes from Gorgona Island (eastern Pacific Ocean). Mar. Biol., 141, 789-793.
Paratrechina faisonensis	Hymenoptera	37.45	Diamond, S. E., Sorger, M. D., Hulcr, J., Pelini, S. L., Del Toro, I., Hirsch, C., Oberg, E., & Dunn, R. R. (2012). Who likes it hot? A global analysis of the climatic, ecological, and evolutionary determinants of warming tolerance in ants. Global Change Biology, 18, 448-456.
Bufo haemititicus	Anura	37.5	Brattstrom, B. H. (1968). Thermal acclimation in anuran amphibians as a function of latitude and altitude. Comparative Biochemistry and Physiology, 24(1), 93-111.
Eurycea multiplicata	Caudata	37.5	Gatz Jr, A. J. (1971). Critical thermal maxima of Ambystoma maculatum (Shaw) and Ambystoma jeffersonianum (Green) in relation to time of breeding. Herpetologica, 27(2), 157-160.

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
Drosophila serrata	Diptera	37.6	Mitchell, K. A., & Hoffmann, A. A. (2010). Thermal ramping rate influences evolutionary potential and species differences for upper thermal limits in Drosophila. Functional Ecology, 24, 694-700.
Tellina piratica	Veneroida	37.6	Compton, T. J., Rijkenberg, M. J. A., Drent, J., & Piersma, T. (2007). Thermal tolerance ranges and climate variability: A comparison between bivalves from differing climates. J. Exp. Mar. Biol. Ecol., 352, 200-211.
Eurycea longicauda	Caudata	37.6	Gatz Jr, A. J. (1971). Critical thermal maxima of Ambystoma maculatum (Shaw) and Ambystoma jeffersonianum (Green) in relation to time of breeding. Herpetologica, 27(2), 157-160.
Merizodus soledadinus	Coleoptera	37.7	Lalouette, L., Williams, I. H., Cottin, M., Sinclair, B. J., & Renault, D. (2011). Thermal biology of the alien ground beetle Merizodus soledadinus. Polar Biology, 35(4), 509-517
Corbula sp	Veneroida	37.7	Compton, T. J., Rijkenberg, M. J. A., Drent, J., & Piersma, T. (2007). Thermal tolerance ranges and climate variability: A comparison between bivalves from differing climates. J. Exp. Mar. Biol. Ecol., 352, 200-211.

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
Stegastes acapulcoensis	Perciformes	37.7	Mora, C., & Ospina, A. F. (2001). Tolerance to high temperatures and potential impact of sea warming on reef fishes of Gorgona Island (tropical eastern Pacific). Mar. Biol., 139, 765-769. Mora, C., & Ospina, A. F. (2002). Experimental effect of cold, La Nina temperatures on the survival of reef fishes from Gorgona Island (eastern Pacific Ocean). Mar. Biol., 141, 789-793.
Hyla regilla	Anura	37.7	Brattstrom, B. H. (1968). Thermal acclimation in anuran amphibians as a function of latitude and altitude. Comparative Biochemistry and Physiology, 24(1), 93-111.
Linepithema humile	Hymenoptera	37.75	Jumbam, K. R., Jackson, S., Terblanche, J. S., McGeoch, M. A., & Chown, S. L. (2008). Acclimation effects on critical and lethal thermal limits of workers of the Argentine ant, Linepithema humile. Journal of Insect Physiology, 54, 1008-1014.
Glossina pallidipes	Diptera	37.9	Terblanche, J. S., Clusella-Trullas, S., Deere, J. A., & Chown, S. L. (2008). Thermal tolerance in a south-east African population of the tsetse fly Glossina pallidipes (Diptera, Glossinidae): Implications for forecasting climate change impacts. J. Insect Physiol., 54, 114-127.
Halozetes marinus	Acarina	37.9	Deere, J. A., Sinclair, B. J., Marshall, D. J., & Chown, S. L. (2006). Phenotypic plasticity of thermal

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
			tolerances in five oribatid mite species from sub-Antarctic Marion Island. J. Insect Physiol., 52, 693-700.
Aphaenogaster rudis	Hymenoptera	38	Diamond, S. E., Sorger, M. D., Hulcr, J., Pelini, S. L., Del Toro, I., Hirsch, C., Oberg, E., & Dunn, R. R. (2012). Who likes it hot? A global analysis of the climatic, ecological, and evolutionary determinants of warming tolerance in ants. Global Change Biology, 18, 448-456.
Aphaenogaster sp.	Hymenoptera	38	Diamond, S. E., Sorger, M. D., Hulcr, J., Pelini, S. L., Del Toro, I., Hirsch, C., Oberg, E., & Dunn, R. R. (2012). Who likes it hot? A global analysis of the climatic, ecological, and evolutionary determinants of warming tolerance in ants. Global Change Biology, 18, 448-456.
Drosophila melanogaster	Diptera	38	Mitchell, K. A., & Hoffmann, A. A. (2010). Thermal ramping rate influences evolutionary potential and species differences for upper thermal limits in Drosophila. Functional Ecology, 24, 694-700.
Drosophila repleta	Diptera	38	Mitchell, K. A., & Hoffmann, A. A. (2010). Thermal ramping rate influences evolutionary potential and species differences for upper thermal limits in Drosophila. Functional Ecology, 24, 694-700.
Hypoponera sp.	Hymenoptera	38	Diamond, S. E., Sorger, M. D., Hulcr, J., Pelini, S. L., Del Toro, I., Hirsch, C., Oberg, E., & Dunn, R. R. (2012). Who likes it hot? A global analysis of the climatic, ecological, and evolutionary determinants of

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
			warming tolerance in ants. Global Change Biology, 18, 448-456.
Lasius alienus	Hymenoptera	38	Diamond, S. E., Sorger, M. D., Hulcr, J., Pelini, S. L., Del Toro, I., Hirsch, C., Oberg, E., & Dunn, R. R. (2012). Who likes it hot? A global analysis of the climatic, ecological, and evolutionary determinants of warming tolerance in ants. Global Change Biology, 18, 448-456.
Myrmica americana	Hymenoptera	38	Diamond, S. E., Sorger, M. D., Hulcr, J., Pelini, S. L., Del Toro, I., Hirsch, C., Oberg, E., & Dunn, R. R. (2012). Who likes it hot? A global analysis of the climatic, ecological, and evolutionary determinants of warming tolerance in ants. Global Change Biology, 18, 448-456.
Myrmica punctiventris	Hymenoptera	38	Diamond, S. E., Sorger, M. D., Hulcr, J., Pelini, S. L., Del Toro, I., Hirsch, C., Oberg, E., & Dunn, R. R. (2012). Who likes it hot? A global analysis of the climatic, ecological, and evolutionary determinants of warming tolerance in ants. Global Change Biology, 18, 448-456.
Notechis scutatus	Squamata	38	Spellerberg (1972). Temperature tolerances of southeast australian reptiles examined in relation to reptile thermoregulatory behavior and distribution. Oecologia, 9, 23-46.

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
Tellina capsoides	Veneroida	38	Compton, T. J., Rijkenberg, M. J. A., Drent, J., & Piersma, T. (2007). Thermal tolerance ranges and climate variability: A comparison between bivalves from differing climates. J. Exp. Mar. Biol. Ecol., 352, 200-211.
Eucinostomus gracilis	Perciformes	38	Mora, C., & Ospina, A. F. (2001). Tolerance to high temperatures and potential impact of sea warming on reef fishes of Gorgona Island (tropical eastern Pacific). Mar. Biol., 139, 765-769. Mora, C., & Ospina, A. F. (2002). Experimental effect of cold, La Nina temperatures on the survival of reef fishes from Gorgona Island (eastern Pacific Ocean). Mar. Biol., 141, 789-793.
Bufo canorus	Anura	38	Brattstrom, B. H. (1968). Thermal acclimation in anuran amphibians as a function of latitude and altitude. Comparative Biochemistry and Physiology, 24(1), 93-111.
Rana virgatipes	Anura	38	Holzman, N., & McManus, J. J. (1973). Effects of acclimation on metabolic rate and thermal tolerance in the carpenter frog, Rana vergatipes. Comparative Biochemistry and Physiology Part A: Physiology, 45(3), 833-842.
Taricha torosa	Caudata	38	McFarland, W. N. (1955). Upper lethal temperatures in the salamander Taricha torosa as a function of acclimation. Copeia, 1955(3), 191-194.

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
Charina bottae	Squamata	38	Zhang, Y., Westfall, M. C., Hermes, K. C., & Dorcas, M. E. (2008). Physiological and behavioral control of heating and cooling rates in rubber boas, Charina bottae. Journal of Thermal Biology, 33(1), 7-11.
Lepidophyma flavimaculatum	Squamata	38	Van Berkum, F. H. (1988). Latitudinal patterns of the thermal sensitivity of sprint speed in lizards. The American Naturalist, 132(3), 327-343.
Aphidius rhopalosiphi	Hymenoptera	38.1	Le Lann, C., Roux, O., Serain, N., Van Alphen, J. J. M., Vernon, P., & Van Baaren, J. (2011). Thermal tolerance of sympatric hymenopteran parasitoid species: does it match seasonal activity? Physiological Entomology, 36, 21-28.
Hyla walkeri	Anura	38.1	Brattstrom, B. H. (1968). Thermal acclimation in anuran amphibians as a function of latitude and altitude. Comparative Biochemistry and Physiology, 24(1), 93-111.
Pseudacris triseriata	Anura	38.1	Miller, K., & Packard, G. C. (1974). Critical thermal maximum: ecotypic variation between montane and piedmont chorus frogs (Pseudacris triseriata, Hylidae). Experientia, 30(4), 355-356.
Anolis cristatellus	Squamata	38.1	Huey, R. B., & Webster, T. P. (1976). Thermal biology of Anolis lizards in a complex fauna: the Christatellus group on Puerto Rico. Ecology, 57(5), 985-994.
Drosophila hydei	Diptera	38.2	Mitchell, K. A., & Hoffmann, A. A. (2010). Thermal ramping rate influences evolutionary potential

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
			and species differences for upper thermal limits in Drosophila. Functional Ecology, 24, 694-700.
Sphaerodactylus gaigeae	Squamata	38.2	Huey, R. B., et al. (2009). Why tropical forest lizards are vulnerable to climate warming. Proc. R. Soc. Lond., Ser. B: Biol. Sci., 276, 1939-1948.
Malacoctenus zonifer	Perciformes	38.2	Mora, C., & Ospina, A. F. (2001). Tolerance to high temperatures and potential impact of sea warming on reef fishes of Gorgona Island (tropical eastern Pacific). Mar. Biol., 139, 765-769. Mora, C., & Ospina, A. F. (2002). Experimental effect of cold, La Nina temperatures on the survival of reef fishes from Gorgona Island (eastern Pacific Ocean). Mar. Biol., 141, 789-793.
Sphaerodactylus gaigeae	Squamata	38.2	Alvarez-Perez, H. J. (1992). Thermal characteristics of Sphaerodactylus species in Puerto Rico and their implications for the distribution of the species in Puerto Rico (Doctoral dissertation, Universidad de Puerto Rico).
Aphidius avenae	Hymenoptera	38.3	Le Lann, C., Roux, O., Serain, N., Van Alphen, J. J. M., Vernon, P., & Van Baaren, J. (2011). Thermal tolerance of sympatric hymenopteran parasitoid species: does it match seasonal activity? Physiological Entomology, 36, 21-28.
Trimeresurus gracilis	Squamata	38.3	Huang, S. M., Huang, S. P., Chen, Y. H., & Tu, M. C. (2007). Thermal tolerance and Altitudinal

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
			distribution of three Trimeresurus snakes (Viperidae : Crotalinae) in Taiwan. Zool. Stud., 46, 592-599.
Hyla chloris	Anura	38.3	Johnson, C. R. (1972). Diel variation in the thermal tolerance of Litoria gracilenta (Anura: Hylidae). Comparative Biochemistry and Physiology Part A: Physiology, 41(4), 727-730.
Hyla gracilenta	Anura	38.3	Johnson, C. R. (1972). Diel variation in the thermal tolerance of Litoria gracilenta (Anura: Hylidae). Comparative Biochemistry and Physiology Part A: Physiology, 41(4), 727-730.
Thamnophis ordinoides	Squamata	38.3	Stewart, G. R. (1965). Thermal ecology of the garter snakes Thamnophis sirtalis concinnus (Hallowell) and Thamnophis ordinoides (Baird and Girard). Herpetologica, 21(2), 81-102.
Trimeresurus gracilis	Squamata	38.3	Chen, Y. W., Chen, M. H., Chen, Y. C., Hung, D. Z., Chen, C. K., Yen, D. H. T., ... & Yang, C. C. (2009). Differences in clinical profiles of patients with Protobothrops mucrosquamatus and Viridovipera stejnegeri envenoming in Taiwan. The American Journal of Tropical Medicine and Hygiene, 80(1), 28-32.
Anolis cupreus	Squamata	38.4	Van Berkum, F. H. (1988). Latitudinal patterns of the thermal sensitivity of sprint speed in lizards. The American Naturalist, 132(3), 327-343.
Anolis intermedius	Squamata	38.4	Van Berkum, F. H. (1988). Latitudinal patterns of the thermal sensitivity of sprint speed in lizards. The American Naturalist, 132(3), 327-343.

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
Sphenomorphus taiwanensis	Squamata	38.4	Huang, S. P., Hsu, Y., & Tu, M. C. (2006). Thermal tolerance and altitudinal distribution of two Sphenomorphus lizards in Taiwan. Journal of Thermal Biology, 31(5), 378-385.
Ambystoma maculatum	Caudata	38.5	Gatz Jr, A. J. (1971). Critical thermal maxima of Ambystoma maculatum (Shaw) and Ambystoma jeffersonianum (Green) in relation to time of breeding. Herpetologica, 27(2), 157-160.
Drosophila bunnanda	Diptera	38.6	Overgaard, J., Kristensen, T. N., Mitchell, K. A., & Hoffmann, A. A. (2011). Thermal tolerance in widespread and tropical Drosophila species: Does phenotypic plasticity increase with latitude? The American Naturalist, 178, S80-S96.
Hemiergis peronii	Squamata	38.6	Bennett, A. F., & Johnalder, H. (1986). Thermal relations of some Australian skinks (sauria, scincidae). Copeia, 1986(1), 57-64. Greer, A. E. (1980). Critical thermal maximum temperature in australian scincid lizards - their ecological and evolutionary significance. Aust. J. Zool., 28, 91-102.
Protobothrops mucrosquamatus	Squamata	38.6	Huang, S. M., Huang, S. P., Chen, Y. H., & Tu, M. C. (2007). Thermal tolerance and Altitudinal distribution of three Trimeresurus snakes (Viperidae : Crotalinae) in Taiwan. Zool. Stud., 46, 592-599.
Leiolopisma mustelinum	Squamata	38.6	Spellerberg (1972). Temperature tolerances of southeast australian reptiles examined in relation to

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
			reptile thermoregulatory behavior and distribution. Oecologia, 9, 23-46.
Protobothrops mucrosquamatus	Squamata	38.6	Chen, Y. W., Chen, M. H., Chen, Y. C., Hung, D. Z., Chen, C. K., Yen, D. H. T., ... & Yang, C. C. (2009). Differences in clinical profiles of patients with Protobothrops mucrosquamatus and Viridovipera stejnegeri envenoming in Taiwan. The American Journal of Tropical Medicine and Hygiene, 80(1), 28-32.
Hyla labialis	Anura	38.6	Mahoney, J. J., & Hutchison, V. H. (1969). Photoperiod acclimation and 24-hour variations in the critical thermal maxima of a tropical and a temperate frog. Oecologia, 2(2), 143-161.
Ectemnorhinus similis	Coleoptera	38.7	Klok, C. J., & Chown, S. L. (2003). Resistance to temperature extremes in sub-Antarctic weevils: interspecific variation, population differentiation and acclimation. Biological Journal for the Linnean Society, 78, 401-414.
Pringleophaga marioni	Lepidoptera	38.7	Klok, C. J., & Chown, S. L. (1997). Critical thermal limits, temperature tolerance and water balance of a sub-Antarctic caterpillar, Pringleophaga marioni (Lepidoptera: Tineidae). Journal of Insect Physiology, 43, 685-694.
Pringleophaga marioni	Lepidoptera	38.7	Dahlgaard, J., Loeschcke, V., Michalak, P. & Justesen, J. (1998). Induced thermotolerance and associated expression of the heat-shock protein Hsp70 in adult Drosophila melanogaster. Functional Ecology, 12, 786–793.

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
Canonopsis sericeus	Coleoptera	38.7	Klok, C. J., & Chown, S. L. (2003). Resistance to temperature extremes in sub-Antarctic weevils: interspecific variation, population differentiation and acclimation. Biol. J. Linn. Soc., 78, 401-414.
Myzus ornatus	Hemiptera	38.75	Hazell, S. P., Neve, B. P., Groutides, C., Douglas, A. E., Blackburn, T. M., & Bale, J. S. (2010). Hyperthermic aphids: Insights into behaviour and mortality. Journal of Insect Physiology, 56, 123-131.
Drosophila simulans	Diptera	38.8	Overgaard, J., Kristensen, T. N., Mitchell, K. A., & Hoffmann, A. A. (2011). Thermal tolerance in widespread and tropical Drosophila species: Does phenotypic plasticity increase with latitude? The American Naturalist, 178, S80-S96.
Myrmecina americana	Hymenoptera	38.8	Diamond, S. E., Sorger, M. D., Hulcr, J., Pelini, S. L., Del Toro, I., Hirsch, C., Oberg, E., & Dunn, R. R. (2012). Who likes it hot? A global analysis of the climatic, ecological, and evolutionary determinants of warming tolerance in ants. Global Change Biology, 18, 448-456.
Ponera pennsylvanica	Hymenoptera	38.8	Diamond, S. E., Sorger, M. D., Hulcr, J., Pelini, S. L., Del Toro, I., Hirsch, C., Oberg, E., & Dunn, R. R. (2012). Who likes it hot? A global analysis of the climatic, ecological, and evolutionary determinants of warming tolerance in ants. Global Change Biology, 18, 448-456.
Prenolepis imparis	Hymenoptera	38.8	Diamond, S. E., Sorger, M. D., Hulcr, J., Pelini, S. L., Del Toro, I., Hirsch, C., Oberg, E., & Dunn, R. R.

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
			(2012). Who likes it hot? A global analysis of the climatic, ecological, and evolutionary determinants of warming tolerance in ants. Global Change Biology, 18, 448-456.
Anolis cooki	Squamata	38.8	Huey, R. B., et al. (2009). Why tropical forest lizards are vulnerable to climate warming. Proc. R. Soc. Lond., Ser. B: Biol. Sci., 276, 1939-1948.
Anolis cooki	Squamata	38.9	Huey, R. B., & Webster, T. P. (1976). Thermal biology of Anolis lizards in a complex fauna: the Christatellus group on Puerto Rico. Ecology, 57(5), 985-994.
Trimeresurus stejnegeri_stejnegeri	Squamata	38.9	Huang, S. M., Huang, S. P., Chen, Y. H., & Tu, M. C. (2007). Thermal tolerance and Altitudinal distribution of three Trimeresurus snakes (Viperidae : Crotalinae) in Taiwan. Zool. Stud., 46, 592-599.
Trimeresurus stejnegeri_stejnegeri	Squamata	38.9	Chen, Y. W., Chen, M. H., Chen, Y. C., Hung, D. Z., Chen, C. K., Yen, D. H. T., ... & Yang, C. C. (2009). Differences in clinical profiles of patients with Protobothrops mucrosquamatus and Viridovipera stejnegeri envenoming in Taiwan. The American Journal of Tropical Medicine and Hygiene, 80(1), 28-32.
Drosophila bipectinata	Diptera	39	Overgaard, J., Kristensen, T. N., Mitchell, K. A., & Hoffmann, A. A. (2011). Thermal tolerance in widespread and tropical Drosophila species: Does phenotypic plasticity increase with latitude? The American Naturalist, 178, S80-S96.

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
Drosophila birchii	Diptera	39	Overgaard, J., Kristensen, T. N., Mitchell, K. A., & Hoffmann, A. A. (2011). Thermal tolerance in widespread and tropical Drosophila species: Does phenotypic plasticity increase with latitude? The American Naturalist, 178, S80-S96.
Drosophila pseudoananassae	Diptera	39	Overgaard, J., Kristensen, T. N., Mitchell, K. A., & Hoffmann, A. A. (2011). Thermal tolerance in widespread and tropical Drosophila species: Does phenotypic plasticity increase with latitude? The American Naturalist, 178, S80-S96.
Chrysomela aeneicollis	Coleoptera	39	Neargarder, G., Dahlhoff, E. P., & Rank, N. E. (2003). Variation in thermal tolerance is linked to phosphoglucose isomerase genotype in a montane leaf beetle. Functional Ecology, 17(2), 213-221.
Litoria gracilenta	Anura	39	Johnson, C. R. (1972). Diel variation in the thermal tolerance of Litoria gracilenta (Anura: Hylidae). Comparative Biochemistry and Physiology Part A: Physiology, 41(4), 727-730.
Anolis cybotes	Squamata	39	Hertz, P. E., & Huey, R. B. (1981). Compensation for altitudinal changes in the thermal environment by some Anolis lizards on Hispaniola. Ecology, 62(3), 515-521.
Xantusia riversiana	Squamata	39	Mautz, W. J., Daniels, C. B., & Bennett, A. F. (1992). Thermal dependence of locomotion and aggression in a xantusiid lizard. Herpetologica, 48(3), 271-279.

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
Drosophila hydei	Squamata	39.2	Overgaard, J., Kristensen, T. N., Mitchell, K. A., & Hoffmann, A. A. (2011). Thermal tolerance in widespread and tropical Drosophila species: Does phenotypic plasticity increase with latitude? The American Naturalist, 178, S80-S96.
Palirhoeus eatoni	Coleoptera	39.2	Klok, C. J., & Chown, S. L. (2003). Resistance to temperature extremes in sub-Antarctic weevils: interspecific variation, population differentiation and acclimation. Biological Journal of the Linnean Society, 78, 401-414.
Thamnophis sirtalis concinnus	Squamata	39.2	Stewart, G. R. (1965). Thermal ecology of the garter snakes Thamnophis sirtalis concinnus (Hallowell) and Thamnophis ordinoides (Baird and Girard). Herpetologica, 21(2), 81-102.
Hemiergis decresiensis	Squamata	39.3	Spellerberg (1972). Temperature tolerances of southeast australian reptiles examined in relation to reptile thermoregulatory behavior and distribution. Oecologia, 9, 23-46.
Hyla caerulea	Anura	39.3	Johnson, C. R. (1972). Diel variation in the thermal tolerance of Litoria gracilenta (Anura: Hylidae). Comparative Biochemistry and Physiology Part A: Physiology, 41(4), 727-730.
Drosophila repleta	Diptera	39.4	Overgaard, J., Kristensen, T. N., Mitchell, K. A., & Hoffmann, A. A. (2011). Thermal tolerance in widespread and tropical Drosophila species: Does phenotypic plasticity increase with latitude? The American Naturalist, 178, S80-S96.

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
Hyla rothi	Anura	39.4	Johnson, C. R. (1972). Diel variation in the thermal tolerance of Litoria gracilenta (Anura: Hylidae). Comparative Biochemistry and Physiology Part A: Physiology, 41(4), 727-730.
Aphaenogaster carolinensis	Hymenoptera	39.5	Diamond, S. E., Sorger, M. D., Hulcr, J., Pelini, S. L., Del Toro, I., Hirsch, C., Oberg, E., & Dunn, R. R. (2012). Who likes it hot? A global analysis of the climatic, ecological, and evolutionary determinants of warming tolerance in ants. Global Change Biology, 18, 448-456.
Drosophila busckii	Diptera	39.5	Overgaard, J., Kristensen, T. N., Mitchell, K. A., & Hoffmann, A. A. (2011). Thermal tolerance in widespread and tropical Drosophila species: Does phenotypic plasticity increase with latitude? The American Naturalist, 178, S80-S96.
Myzus polaris	Hemiptera	39.5	Hazell, S. P., Neve, B. P., Groutides, C., Douglas, A. E., Blackburn, T. M., & Bale, J. S. (2010). Hyperthermic aphids: Insights into behaviour and mortality. Journal of Insect Physiology, 56, 123-131.
Podacarus auberti	Acari	39.5	Deere, J. A., Sinclair, B. J., Marshall, D. J., & Chown, S. L. (2006). Phenotypic plasticity of thermal tolerances in five oribatid mite species from sub-Antarctic Marion Island. J. Insect Physiol., 52, 693-700.
Sphaerodactylus macrolepis	Squamata	39.5	Huey, R. B., et al. (2009). Why tropical forest lizards are vulnerable to climate warming. Proc. R. Soc. Lond., Ser. B: Biol. Sci., 276, 1939-1948.

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
Sphaerodactylus roosevelti	Squamata	39.5	Huey, R. B., et al. (2009). Why tropical forest lizards are vulnerable to climate warming. Proc. R. Soc. Lond., Ser. B: Biol. Sci., 276, 1939-1948.
Sphaerodactylus macrolepis	Squamata	39.5	Alvarez-Perez, H. J. (1992). Thermal characteristics of Sphaerodactylus species in Puerto Rico and their implications for the distribution of the species in Puerto Rico (Doctoral dissertation, Universidad de Puerto Rico).
Sphaerodactylus roosevelti	Squamata	39.5	Alvarez-Perez, H. J. (1992). Thermal characteristics of Sphaerodactylus species in Puerto Rico and their implications for the distribution of the species in Puerto Rico (Doctoral dissertation, Universidad de Puerto Rico).
Pternohyla fodiens	Anura	39.5	Brattstrom, B. H. (1968). Thermal acclimation in anuran amphibians as a function of latitude and altitude. Comparative Biochemistry and Physiology, 24(1), 93-111.
Bathygobius ramosus	Perciformes	39.6	Mora, C., & Ospina, A. F. (2001). Tolerance to high temperatures and potential impact of sea warming on reef fishes of Gorgona Island (tropical eastern Pacific). Mar. Biol., 139, 765-769. Mora, C., & Ospina, A. F. (2002). Experimental effect of cold, La Nina temperatures on the survival of reef fishes from Gorgona Island (eastern Pacific Ocean). Mar. Biol., 141, 789-793.

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
Prenolepis imparis	Hymenoptera	39.6	Diamond, S. E., Sorger, M. D., Hulcr, J., Pelini, S. L., Del Toro, I., Hirsch, C., Oberg, E., & Dunn, R. R. (2012). Who likes it hot? A global analysis of the climatic, ecological, and evolutionary determinants of warming tolerance in ants. Global Change Biology, 18, 448-456.
Pardosa nigriceps	Araneae	39.7	Almquist, S. (1970). Thermal tolerances and preferences of some dune-living spiders. Oikos, 21, 230-235.
Embryonopsis halticella	Lepidoptera	39.7	Klok, C. J., & Chown, S. L. (1998). Field thermal ecology and water relations of gregaria phase African armyworm caterpillars, Spodoptera exempta (Lepidoptera : Noctuidae). J. Therm. Biol., 23, 131-142.
Tetramorium caespitum	Hymenoptera	39.75	Diamond, S. E., Sorger, M. D., Hulcr, J., Pelini, S. L., Del Toro, I., Hirsch, C., Oberg, E., & Dunn, R. R. (2012). Who likes it hot? A global analysis of the climatic, ecological, and evolutionary determinants of warming tolerance in ants. Global Change Biology, 18, 448-456.
Aphaenogaster rudis	Hymenoptera	39.8	Diamond, S. E., Sorger, M. D., Hulcr, J., Pelini, S. L., Del Toro, I., Hirsch, C., Oberg, E., & Dunn, R. R. (2012). Who likes it hot? A global analysis of the climatic, ecological, and evolutionary determinants of warming tolerance in ants. Global Change Biology, 18, 448-456.
Eulamprus quoyi	Squamata	39.8	Spellerberg (1972). Temperature tolerances of southeast australian reptiles examined in relation to

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
			reptile thermoregulatory behavior and distribution. Oecologia, 9, 23-46.
Sphenomorphus tympanum	Squamata	39.8	Spellerberg (1972). Temperature tolerances of southeast australian reptiles examined in relation to reptile thermoregulatory behavior and distribution. Oecologia, 9, 23-46.
Leptodactylus melanotus	Anura	39.8	Brattstrom, B. H. (1968). Thermal acclimation in anuran amphibians as a function of latitude and altitude. Comparative Biochemistry and Physiology, 24(1), 93-111.
Drosophila tripunctata	Diptera	39.9	Worthen, W. B., & Haney, D. C. (1999). Temperature tolerance in three mycophagous Drosophila species: relationships with community structure. Oikos, 86, 113-118.
Halozetes fulvus	Acarina	39.9	Deere, J. A., Sinclair, B. J., Marshall, D. J., & Chown, S. L. (2006). Phenotypic plasticity of thermal tolerances in five oribatid mite species from sub-Antarctic Marion Island. J. Insect Physiol., 52, 693-700.
Phymaturus patagonicus	Squamata	39.9	Ibarguengoytia, N. R. (2005). Field, selected body temperature and thermal tolerance of the syntopic lizards Phymaturus patagonicus and Liolaemus elongatus (Iguania: Liolaemidae). J. Arid Environ., 62, 435-448.
Bufo alvarius	Anura	39.9	Brattstrom, B. H. (1968). Thermal acclimation in anuran amphibians as a function of latitude and altitude. Comparative Biochemistry and Physiology, 24(1), 93-111.

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
Phymaturus patagonicus	Squamata	39.9	Hertz, P. E., & Huey, R. B. (1981). Compensation for altitudinal changes in the thermal environment by some Phymaturus lizards on Hispaniola. Ecology, 62(3), 515-521.
Bufo mazatlanensis	Anura	39.9	Brattstrom, B. H. (1968). Thermal acclimation in anuran amphibians as a function of latitude and altitude. Comparative Biochemistry and Physiology, 24(1), 93-111.
Acanthomyops sp.	Hymenoptera	40	Diamond, S. E., Sorger, M. D., Hulcr, J., Pelini, S. L., Del Toro, I., Hirsch, C., Oberg, E., & Dunn, R. R. (2012). Who likes it hot? A global analysis of the climatic, ecological, and evolutionary determinants of warming tolerance in ants. Global Change Biology, 18, 448-456.
Amblyopone pallipes	Hymenoptera	40	Diamond, S. E., Sorger, M. D., Hulcr, J., Pelini, S. L., Del Toro, I., Hirsch, C., Oberg, E., & Dunn, R. R. (2012). Who likes it hot? A global analysis of the climatic, ecological, and evolutionary determinants of warming tolerance in ants. Global Change Biology, 18, 448-456.
Aphaenogaster rudis	Hymenoptera	40	Diamond, S. E., Sorger, M. D., Hulcr, J., Pelini, S. L., Del Toro, I., Hirsch, C., Oberg, E., & Dunn, R. R. (2012). Who likes it hot? A global analysis of the climatic, ecological, and evolutionary determinants of warming tolerance in ants. Global Change Biology, 18, 448-456.

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
Camponotus novaeboracensis	Hymenoptera	40	Diamond, S. E., Sorger, M. D., Hulcr, J., Pelini, S. L., Del Toro, I., Hirsch, C., Oberg, E., & Dunn, R. R. (2012). Who likes it hot? A global analysis of the climatic, ecological, and evolutionary determinants of warming tolerance in ants. Global Change Biology, 18, 448-456.
Camponotus pennsylvanicus	Hymenoptera	40	Diamond, S. E., Sorger, M. D., Hulcr, J., Pelini, S. L., Del Toro, I., Hirsch, C., Oberg, E., & Dunn, R. R. (2012). Who likes it hot? A global analysis of the climatic, ecological, and evolutionary determinants of warming tolerance in ants. Global Change Biology, 18, 448-456.
Drosophila falleni	Diptera	40	Worthen, W. B., & Haney, D. C. (1999). Temperature tolerance in three mycophagous Drosophila species: relationships with community structure. Oikos, 86, 113-118.
Formica aserva	Hymenoptera	40	Diamond, S. E., Sorger, M. D., Hulcr, J., Pelini, S. L., Del Toro, I., Hirsch, C., Oberg, E., & Dunn, R. R. (2012). Who likes it hot? A global analysis of the climatic, ecological, and evolutionary determinants of warming tolerance in ants. Global Change Biology, 18, 448-456.
Formica neogagates	Hymenoptera	40	Diamond, S. E., Sorger, M. D., Hulcr, J., Pelini, S. L., Del Toro, I., Hirsch, C., Oberg, E., & Dunn, R. R. (2012). Who likes it hot? A global analysis of the climatic, ecological, and evolutionary determinants of

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
			warming tolerance in ants. Global Change Biology, 18, 448-456.
Formica pergandei	Hymenoptera	40	Diamond, S. E., Sorger, M. D., Hulcr, J., Pelini, S. L., Del Toro, I., Hirsch, C., Oberg, E., & Dunn, R. R. (2012). Who likes it hot? A global analysis of the climatic, ecological, and evolutionary determinants of warming tolerance in ants. Global Change Biology, 18, 448-456.
Formica subsericea	Hymenoptera	40	Diamond, S. E., Sorger, M. D., Hulcr, J., Pelini, S. L., Del Toro, I., Hirsch, C., Oberg, E., & Dunn, R. R. (2012). Who likes it hot? A global analysis of the climatic, ecological, and evolutionary determinants of warming tolerance in ants. Global Change Biology, 18, 448-456.
Lasius sp.	Hymenoptera	40	Diamond, S. E., Sorger, M. D., Hulcr, J., Pelini, S. L., Del Toro, I., Hirsch, C., Oberg, E., & Dunn, R. R. (2012). Who likes it hot? A global analysis of the climatic, ecological, and evolutionary determinants of warming tolerance in ants. Global Change Biology, 18, 448-456.
Pheidole pallidula	Hymenoptera	40	Cerda, X., Retana, J., & Cros, S. (1998). Critical thermal limits in Mediterranean ant species: trade-off between mortality risk and foraging performance. Functional Ecology, 12, 45-55.
Plagiolepis pygmaea	Hymenoptera	40	Cerda, X., Retana, J., & Cros, S. (1998). Critical thermal limits in Mediterranean ant species: trade-off

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
			between mortality risk and foraging performance. Functional Ecology, 12, 45-55.
Proceratium silaceum	Hymenoptera	40	Diamond, S. E., Sorger, M. D., Hulcr, J., Pelini, S. L., Del Toro, I., Hirsch, C., Oberg, E., & Dunn, R. R. (2012). Who likes it hot? A global analysis of the climatic, ecological, and evolutionary determinants of warming tolerance in ants. Global Change Biology, 18, 448-456.
Solenopsis molesta	Hymenoptera	40	Diamond, S. E., Sorger, M. D., Hulcr, J., Pelini, S. L., Del Toro, I., Hirsch, C., Oberg, E., & Dunn, R. R. (2012). Who likes it hot? A global analysis of the climatic, ecological, and evolutionary determinants of warming tolerance in ants. Global Change Biology, 18, 448-456.
Stenamma impar	Hymenoptera	40	Diamond, S. E., Sorger, M. D., Hulcr, J., Pelini, S. L., Del Toro, I., Hirsch, C., Oberg, E., & Dunn, R. R. (2012). Who likes it hot? A global analysis of the climatic, ecological, and evolutionary determinants of warming tolerance in ants. Global Change Biology, 18, 448-456.
Tapinoma sessile	Hymenoptera	40	Diamond, S. E., Sorger, M. D., Hulcr, J., Pelini, S. L., Del Toro, I., Hirsch, C., Oberg, E., & Dunn, R. R. (2012). Who likes it hot? A global analysis of the climatic, ecological, and evolutionary determinants of warming tolerance in ants. Global Change Biology, 18, 448-456.

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
Tetramorium caespitum	Hymenoptera	40	Diamond, S. E., Sorger, M. D., Hulcr, J., Pelini, S. L., Del Toro, I., Hirsch, C., Oberg, E., & Dunn, R. R. (2012). Who likes it hot? A global analysis of the climatic, ecological, and evolutionary determinants of warming tolerance in ants. Global Change Biology, 18, 448-456.
Tetramorium semilaeve	Hymenoptera	40	Cerda, X., Retana, J., & Cros, S. (1998). Critical thermal limits in Mediterranean ant species: trade-off between mortality risk and foraging performance. Functional Ecology, 12, 45-55.
Chamaeleo jacksonii	Squamata	40	Bennett, A. F. (2004). Thermoregulation in African chameleons Proc. Third Int. Conf. Comp. Phys. Biochem., 1275, 234-241
Niveoscincus metallicum	Squamata	40	Spellerberg (1972). Temperature tolerances of southeast australian reptiles examined in relation to reptile thermoregulatory behavior and distribution. Oecologia, 9, 23-46.
Suta flagellum	Squamata	40	Spellerberg (1972). Temperature tolerances of southeast australian reptiles examined in relation to reptile thermoregulatory behavior and distribution. Oecologia, 9, 23-46.
Linepithema humile	Hymenoptera	40	Jumbam, K. R., Jackson, S., Terblanche, J. S., McGeoch, M. A., & Chown, S. L. (2008). Acclimation effects on critical and lethal thermal limits of workers of the Argentine ant, Linepithema humile. Journal of Insect Physiology, 54(6), 1008-1014.

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
Pheidole pallldula	Hymenoptera	40	Cerda, X., Arnan, X., & Retana, J. (2013). Is competition a significant hallmark of ant (Hymenoptera: Formicidae) ecology. Myrmecological News, 18, 131-147.
Plagiolepis pygmaea	Hymenoptera	40	Cerda, X., Arnan, X., & Retana, J. (2013). Is competition a significant hallmark of ant (Hymenoptera: Formicidae) ecology. Myrmecological News, 18, 131-147.
Tetromorium semilaeve	Hymenoptera	40	Cerda, X., Arnan, X., & Retana, J. (2013). Is competition a significant hallmark of ant (Hymenoptera: Formicidae) ecology. Myrmecological News, 18, 131-147.
Ceratosolen arabicus	Hymenoptera	40.07	Warren, M., Robertson, M. P., & Greef, J. M. (2010). A comparative approach to understanding factors limiting abundance patterns and distributions in a fig tree-fig wasp mutualism. Ecography, 33, 148-158.
Niveoscincus ocellatum	Squamata	40.1	Spellerberg (1972). Temperature tolerances of southeast australian reptiles examined in relation to reptile thermoregulatory behavior and distribution. Oecologia, 9, 23-46.
Halozetes belgicae	Acarina	40.1	Deere, J. A., Sinclair, B. J., Marshall, D. J., & Chown, S. L. (2006). Phenotypic plasticity of thermal tolerances in five oribatid mite species from sub-Antarctic Marion Island. J. Insect Physiol., 52, 693-700.
Bufo debilis	Anura	40.1	Brattstrom, B. H. (1968). Thermal acclimation in anuran amphibians as a function of latitude and

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
			altitude. Comparative Biochemistry and Physiology, 24(1), 93-111.
Anolis shrevei	Squamata	40.1	Hertz, P. E., & Huey, R. B. (1981). Compensation for altitudinal changes in the thermal environment by some Anolis lizards on Hispaniola. Ecology, 62(3), 515-521.
Eulamprus kosciuskoi	Squamata	40.2	Spellerberg (1972). Temperature tolerances of southeast australian reptiles examined in relation to reptile thermoregulatory behavior and distribution. Oecologia, 9, 23-46.
Bufo marmoreus	Anura	40.2	Brattstrom, B. H. (1968). Thermal acclimation in anuran amphibians as a function of latitude and altitude. Comparative Biochemistry and Physiology, 24(1), 93-111.
Myzus persicae	Hemiptera	40.25	Hazell, S. P., Neve, B. P., Groutides, C., Douglas, A. E., Blackburn, T. M., & Bale, J. S. (2010). Hyperthermic aphids: Insights into behaviour and mortality. Journal of Insect Physiology, 56, 123-131.
Spea hammondi	Anura	40.3	Brattstrom, B. H. (1968). Thermal acclimation in anuran amphibians as a function of latitude and altitude. Comparative Biochemistry and Physiology, 24(1), 93-111.
Oedothorax apicatus	Araneae	40.4	Almquist, S. (1970). Thermal tolerances and preferences of some dune-living spiders. Oikos, 21, 230-235.

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
Sceloporus undulatus	Squamata	40.4	Angilletta, M. J., Hill, T., & Robson, M. A. (2002). Is physiological performance optimized by thermoregulatory behavior?: a case study of the eastern fence lizard, Sceloporus undulatus. J. Therm. Biol., 27, 199-204.
Smilisca baudini	Anura	40.4	Brattstrom, B. H. (1968). Thermal acclimation in anuran amphibians as a function of latitude and altitude. Comparative Biochemistry and Physiology, 24(1), 93-111.
Camponotus castaneus	Hymenoptera	40.5	Diamond, S. E., Sorger, M. D., Hulcr, J., Pelini, S. L., Del Toro, I., Hirsch, C., Oberg, E., & Dunn, R. R. (2012). Who likes it hot? A global analysis of the climatic, ecological, and evolutionary determinants of warming tolerance in ants. Global Change Biology, 18, 448-456.
Drosophila melanogaster	Diptera	40.5	Overgaard, J., Kristensen, T. N., Mitchell, K. A., & Hoffmann, A. A. (2011). Thermal tolerance in widespread and tropical Drosophila species: Does phenotypic plasticity increase with latitude? The American Naturalist, 178, S80-S96.
Drosophila putrida	Diptera	40.5	Worthen, W. B., & Haney, D. C. (1999). Temperature tolerance in three mycophagous Drosophila species: relationships with community structure. Oikos, 86, 113-118.
Stemonyphantes lineatus	Araneae	40.5	Almquist, S. (1970). Thermal tolerances and preferences of some dune-living spiders. Oikos, 21, 230-235.

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
Sphaerodactylus nicholsi	Squamata	40.5	Huey, R. B., et al. (2009). Why tropical forest lizards are vulnerable to climate warming. Proc. R. Soc. Lond., Ser. B: Biol. Sci., 276, 1939-1948.
Sphaerodactylus nicholsi	Squamata	40.5	Alvarez-Perez, H. J. (1992). Thermal characteristics of Sphaerodactylus species in Puerto Rico and their implications for the distribution of the species in Puerto Rico (Doctoral dissertation, Universidad de Puerto Rico).
Heteronotia binoei	Squamata	40.6	Spellerberg (1972). Temperature tolerances of southeast australian reptiles examined in relation to reptile thermoregulatory behavior and distribution. Oecologia, 9, 23-46.
Aphaenogaster carolinensis	Hymenoptera	40.7	Diamond, S. E., Sorger, M. D., Hulcr, J., Pelini, S. L., Del Toro, I., Hirsch, C., Oberg, E., & Dunn, R. R. (2012). Who likes it hot? A global analysis of the climatic, ecological, and evolutionary determinants of warming tolerance in ants. Global Change Biology, 18, 448-456.
Crematogaster (Physocrema)	Hymenoptera	40.75	Diamond, S. E., Sorger, M. D., Hulcr, J., Pelini, S. L., Del Toro, I., Hirsch, C., Oberg, E., & Dunn, R. R. (2012). Who likes it hot? A global analysis of the climatic, ecological, and evolutionary determinants of warming tolerance in ants. Global Change Biology, 18, 448-456.
Glossina pallidepes	Diptera	40.75	Terblanche, J. S., Deere, J. A., Clusella-Trullas, S., Janion, C., & Chown, S. L. (2007). Critical thermal

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
			limits depend on methodological context. Proceedings of the Royal Society of London B, 274, 2935-2942.
Leptogenys sp.	Hymenoptera	40.75	Diamond, S. E., Sorger, M. D., Hulcr, J., Pelini, S. L., Del Toro, I., Hirsch, C., Oberg, E., & Dunn, R. R. (2012). Who likes it hot? A global analysis of the climatic, ecological, and evolutionary determinants of warming tolerance in ants. Global Change Biology, 18, 448-456.
Chamaeleo hohnelii	Squamata	40.8	Bennett, A. F. (2004). Thermoregulation in African chameleons Proc. Third Int. Conf. Comp. Phys. Biochem., 1275, 234-241
Lampropholis delicata	Squamata	40.8	Spellerberg (1972). Temperature tolerances of southeast australian reptiles examined in relation to reptile thermoregulatory behavior and distribution. Oecologia, 9, 23-46.
Eremias brenchleyi	Squamata	40.8	Xu, X. F., & Ji, X. (2006). Ontogenetic shifts in thermal tolerance, selected body temperature and thermal dependence of food assimilation and locomotor performance in a lacertid lizard, Eremias brenchleyi. Comp. Biochem. Physiol., A: Mol. Integr. Physiol., 143, 118-124.

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
Mugil curema	Perciformes	40.8	Mora, C., & Ospina, A. F. (2001). Tolerance to high temperatures and potential impact of sea warming on reef fishes of Gorgona Island (tropical eastern Pacific). Mar. Biol., 139, 765-769. Mora, C. & Ospina, A. F. (2002). Experimental effect of cold, La Nina temperatures on the survival of reef fishes from Gorgona Island (eastern Pacific Ocean). Mar. Biol., 141, 789-793.
Eremias brenchleyi	Squamata	40.8	Wu, Y., Xu, X., Wu, L., & Zhang, J. (2006). Embryonic use of material and energy and hatchling traits in the lacertid lizard Eremias argus. Dong wu xue bao. Acta Zoologica Sinica, 52(6), 1169-1173.
Apogon novemfasciatus	Perciformes	40.9	Eme, J., & Bennett, W. A. (2009). Critical thermal tolerance polygons of tropical marine fishes from Sulawesi, Indonesia. J. Therm. Biol., 34, 220-225.
Chirodica chalcoptera	Coleoptera	41	Terblanche, J. S., Sinclair, B. J., Klok, C. J., McFarlane, M. L., & Chown, S. L. (2005). The effects of acclimation on thermal tolerance, desiccation resistance and metabolic rate in Chirodica chalcoptera (Coleoptera: Chrysomelidae). Journal of Insect Physiology, 51(9), 1013-1023.
Eremias multiocellata	Squamata	41	Li, H., Wang, Z., Mei, W. B., & Ji, X. (2009). Temperature acclimation affects thermal preference and tolerance in three Eremias lizards (Lacertidae). Current Zoology, 55, 258-265.

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
Uscana lariophaga	Hymenoptera	41.04	Goverde, R. L., Kusters, J. G., & Huis in 't Veld, J. H. J. (1994). Growth rate and physiology of Yersinia enterocolitica; influence of temperature and presence of the virulence plasmid. Journal of Applied Bacteriology, 77(1), 96-104.
Bufo woodhousii fowleri	Anura	41.1	Olson, D. H. (1989). Predation on breeding western toads (Bufo boreas). Copeia, 1989(2), 391-397.
Trachymyrmex septentrionalis	Hymenoptera	41.2	Diamond, S. E., Sorger, M. D., Hulcr, J., Pelini, S. L., Del Toro, I., Hirsch, C., Oberg, E., & Dunn, R. R. (2012). Who likes it hot? A global analysis of the climatic, ecological, and evolutionary determinants of warming tolerance in ants. Global Change Biology, 18, 448-456.
Austrelaps superbus	Squamata	41.2	Spellerberg (1972). Temperature tolerances of southeast australian reptiles examined in relation to reptile thermoregulatory behavior and distribution. Oecologia, 9, 23-46.
Eremiascincus fasciolatus	Squamata	41.2	Bennett, A. F., & John-Alder, H. (1986). Thermal relations of some Australian skinks (Sauria: Scincidae). Copeia, 1986(1), 57-64.
Hypoponera sp.	Hymenoptera	41.25	Diamond, S. E., Sorger, M. D., Hulcr, J., Pelini, S. L., Del Toro, I., Hirsch, C., Oberg, E., & Dunn, R. R. (2012). Who likes it hot? A global analysis of the climatic, ecological, and evolutionary determinants of warming tolerance in ants. Global Change Biology, 18, 448-456.

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
Bufo cognatus	Anura	41.3	Brattstrom, B. H. (1968). Thermal acclimation in anuran amphibians as a function of latitude and altitude. Comparative Biochemistry and Physiology, 24(1), 93-111.
Anolis carolinensis	Squamata	41.3	Lailvaux, S. P., & Irschick, D. J. (2007). The evolution of performance-based male fighting ability in Caribbean Anolis lizards. The American Naturalist, 170(4), 573-586.
Clubiona trivialis	Araneae	41.4	Almquist, S. (1970). Thermal tolerances and preferences of some dune-living spiders. Oikos, 21, 230-235.
Scotina gracilipes	Araneae	41.4	Almquist, S. (1970). Thermal tolerances and preferences of some dune-living spiders. Oikos, 21, 230-235.
Elgaria multicarinatus_webbi	Squamata	41.4	Cunningham, J. D. (1966). Thermal relations of the alligator lizard Gerrhonotus multicarinatus webbi. Herpetologica, 22, 1-7.
Dascyllus aruanus	Perciformes	41.4	Eme, J., & Bennett, W. A. (2009). Critical thermal tolerance polygons of tropical marine fishes from Sulawesi, Indonesia. J. Therm. Biol., 34, 220-225.
Hyla bicolor	Anura	41.4	Johnson, C. R. (1972). Diel variation in the thermal tolerance of Litoria gracilenta (Anura: Hylidae). Comparative Biochemistry and Physiology Part A: Physiology, 41(4), 727-730.
Ceratitis capitata	Diptera	41.5	Nyamukondiwa, C., & Terblanche, J. S. (2010). Within-generation variation of critical thermal limits in adult Mediterranean and Natal fruit flies Ceratitis

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
			capitata and Ceratitis rosa: thermal history affects short-term responses to temperature. Physiological Entomology, 35, 255-264.
Formica subsericea	Hymenoptera	41.5	Diamond, S. E., Sorger, M. D., Hulcr, J., Pelini, S. L., Del Toro, I., Hirsch, C., Oberg, E., & Dunn, R. R. (2012). Who likes it hot? A global analysis of the climatic, ecological, and evolutionary determinants of warming tolerance in ants. Global Change Biology, 18, 448-456.
Sceloporus merriami	Squamata	41.5	Huey, R. B., et al. (2009). Why tropical forest lizards are vulnerable to climate warming. Proc. R. Soc. Lond., Ser. B: Biol. Sci., 276, 1939-1948.
Anadara granosa	Arcoida	41.5	Compton, T. J., Rijkenberg, M. J. A., Drent, J., & Piersma, T. (2007). Thermal tolerance ranges and climate variability: A comparison between bivalves from differing climates. J. Exp. Mar. Biol. Ecol., 352, 200-211.
Sphenomorphus incognitus	Squamata	41.5	Huang, S. P., Hsu, Y., & Tu, M. C. (2006). Thermal tolerance and altitudinal distribution of two Sphenomorphus lizards in Taiwan. Journal of Thermal Biology, 31(5), 378-385.
Chamaeleo schubotzi	Squamata	41.6	Bennett, A. F. (2004). Thermoregulation in African chameleons Proc. Third Int. Conf. Comp. Phys. Biochem., 1275, 234-241
Egernia inornata	Squamata	41.6	Spellerberg (1972). Temperature tolerances of southeast australian reptiles examined in relation to

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
			reptile thermoregulatory behavior and distribution. Oecologia, 9, 23-46.
Hyla glauerti	Anura	41.6	Johnson, C. R. (1972). Diel variation in the thermal tolerance of Litoria gracilenta (Anura: Hylidae). Comparative Biochemistry and Physiology Part A: Physiology, 41(4), 727-730.
Hyla rubella	Anura	41.6	Johnson, C. R. (1972). Diel variation in the thermal tolerance of Litoria gracilenta (Anura: Hylidae). Comparative Biochemistry and Physiology Part A, Physiology, 41(4), 727-730.
Tarentola boettgeri	Squamata	41.6	Brown, R. P. (1996). Thermal biology of the gecko Tarentola boettgeri: comparisons among populations from different elevations within Gran Canaria. Herpetologica, 52(3), 396-405.
Xantusia vigilis	Squamata	41.6	Van Berkum, F. H. (1988). Latitudinal patterns of the thermal sensitivity of sprint speed in lizards. The American Naturalist, 132(3), 327-343.
Sphaerodactylus townsendi	Squamata	41.7	Huey, R. B., et al. (2009). Why tropical forest lizards are vulnerable to climate warming. Proc. R. Soc. Lond., Ser. B: Biol. Sci., 276, 1939-1948.
Anolis carolinensis	Squamata	41.7	Vanberkum, F. H. (1988). Latitudinal patterns of the thermal sensitivity of sprint speed in lizards. Am. Nat., 132, 327-343.
Lasius sp.	Hymenoptera	41.75	Diamond, S. E., Sorger, M. D., Hulcr, J., Pelini, S. L., Del Toro, I., Hirsch, C., Oberg, E., & Dunn, R. R. (2012). Who likes it hot? A global analysis of the climatic, ecological, and evolutionary determinants of

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
			warming tolerance in ants. Global Change Biology, 18, 448-456.
Aphaenogaster fulva	Hymenoptera	41.8	Diamond, S. E., Sorger, M. D., Hulcr, J., Pelini, S. L., Del Toro, I., Hirsch, C., Oberg, E., & Dunn, R. R. (2012). Who likes it hot? A global analysis of the climatic, ecological, and evolutionary determinants of warming tolerance in ants. Global Change Biology, 18, 448-456.
Chirodica chalcoptera	Coleoptera	41.8	Terblanche, J. S., Sinclair, B. J., Klok, C. J., McFarlane, M. L., & Chown, S. L. (2005). The effects of acclimation on thermal tolerance, desiccation resistance and metabolic rate in Chirodica chalcoptera (Coleoptera: Chrysomelidae). Journal of Insect Physiology, 51, 1013-1023.
Chamaeleo ellioti	Squamata	41.8	Bennett, A. F. (2004). Thermoregulation in African chameleons Proc. Third Int. Conf. Comp. Phys. Biochem., 1275, 234-241
Egernia saxatilis	Squamata	41.8	Spellerberg (1972). Temperature tolerances of southeast australian reptiles examined in relation to reptile thermoregulatory behavior and distribution. Oecologia, 9, 23-46.
Egernia whitii	Squamata	41.8	Spellerberg (1972). Temperature tolerances of southeast australian reptiles examined in relation to reptile thermoregulatory behavior and distribution. Oecologia, 9, 23-46.

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
Physignathus gilberti	Squamata	41.8	Spellerberg (1972). Temperature tolerances of southeast australian reptiles examined in relation to reptile thermoregulatory behavior and distribution. Oecologia, 9, 23-46.
Gafrarium dispar	Veneroida	41.8	Compton, T. J., Rijkenberg, M. J. A., Drent, J., & Piersma, T. (2007). Thermal tolerance ranges and climate variability: A comparison between bivalves from differing climates. J. Exp. Mar. Biol. Ecol., 352, 200-211.
Dasyatis sabina	Rajiformes	41.8	Fangue, N. A., & Bennett. W. A. (2003). Thermal tolerance responses of laboratory-acclimated and seasonally acclimatized Atlantic stingray, Dasyatis sabina. Copeia, 2003(2), 315-325.
Bufo marinus	Anura	41.8	Brattstrom, B. H. (1968). Thermal acclimation in anuran amphibians as a function of latitude and altitude. Comparative Biochemistry and Physiology, 24(1), 93-111.
Ceratitis capitata	Diptera	41.9	Nyamukondiwa, C., & Terblanche, J. S. (2010). Within-generation variation of critical thermal limits in adult Mediterranean and Natal fruit flies Ceratitis capitata and Ceratitis rosa: thermal history affects short-term responses to temperature. Physiological Entomology, 35, 255-264.
Plestiodon elegans	Squamata	41.9	Du, W. G., Yan, S. J., & Ji, X. (2000). Selected body temperature, thermal tolerance and thermal dependence of food assimilation and locomotor

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
			performance in adult blue-tailed skinks, Eumeces elegans. J. Therm. Biol., 25, 197-202.
Egernia cunninghami	Squamata	41.9	Spellerberg (1972). Temperature tolerances of southeast australian reptiles examined in relation to reptile thermoregulatory behavior and distribution. Oecologia, 9, 23-46.
Eumeces elegans	Squamata	41.9	Du, W. G., Yan, S. J., & Ji, X. (2000). Selected body temperature, thermal tolerance and thermal dependence of food assimilation and locomotor performance in adult blue-tailed skinks, Eumeces elegans. Journal of Thermal Biology, 25(3), 197-202.
Aphaenogaster lamellidens	Hymenoptera	42	Diamond, S. E., Sorger, M. D., Hulcr, J., Pelini, S. L., Del Toro, I., Hirsch, C., Oberg, E., & Dunn, R. R. (2012). Who likes it hot? A global analysis of the climatic, ecological, and evolutionary determinants of warming tolerance in ants. Global Change Biology, 18, 448-456.
Aphaenogaster sp.	Hymenoptera	42	Diamond, S. E., Sorger, M. D., Hulcr, J., Pelini, S. L., Del Toro, I., Hirsch, C., Oberg, E., & Dunn, R. R. (2012). Who likes it hot? A global analysis of the climatic, ecological, and evolutionary determinants of warming tolerance in ants. Global Change Biology, 18, 448-456.

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
Arenivaga apacha	Blattodea	42	Cohen, A. C., & Cohen, J. L. (1981). Microclimate, temperature and water relations of two species of desert cockroaches. Comparative Biochemistry and Physiology Part A: Physiology, 69, 165-167.
Meloe franciscanus	Coleoptera	42	Cohen, A. C., & Cohen, J. L. (1981). Microclimate, temperature and water relations of two species of desert cockroaches. Comparative Biochemistry and Physiology Part A: Physiology, 69, 165-167.
Pachycondyla tridentata	Hymenoptera	42	Diamond, S. E., Sorger, M. D., Hulcr, J., Pelini, S. L., Del Toro, I., Hirsch, C., Oberg, E., & Dunn, R. R. (2012). Who likes it hot? A global analysis of the climatic, ecological, and evolutionary determinants of warming tolerance in ants. Global Change Biology, 18, 448-456.
Tapinoma nigerrimum	Hymenoptera	42	Cerda, X., Retana, J., & Cros, S. (1998). Critical thermal limits in Mediterranean ant species: trade-off between mortality risk and foraging performance. Functional Ecology, 12, 45-55.
Temnothorax curvispinosus	Hymenoptera	42	Diamond, S. E., Sorger, M. D., Hulcr, J., Pelini, S. L., Del Toro, I., Hirsch, C., Oberg, E., & Dunn, R. R. (2012). Who likes it hot? A global analysis of the climatic, ecological, and evolutionary determinants of warming tolerance in ants. Global Change Biology, 18, 448-456.

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
Clubiona similis	Araneae	42	Almquist, S. (1970). Thermal tolerances and preferences of some dune-living spiders. Oikos, 21, 230-235.
Leiolopisma guichenoti	Squamata	42	Spellerberg (1972). Temperature tolerances of southeast australian reptiles examined in relation to reptile thermoregulatory behavior and distribution. Oecologia, 9, 23-46.
Tetromorium nigerrimum	Hymenoptera	42	Cerda, X., Arnan, X., & Retana, J. (2013). Is competition a significant hallmark of ant (Hymenoptera: Formicidae) ecology. Myrmecological News, 18, 131-147.
Eremiascincus richardsoni	Squamata	42	Bennett, A. F., & John-Alder, H. (1986). Thermal relations of some Australian skinks (Sauria: Scincidae). Copeia, 1986(1), 57-64.
Philodromus aureolus	Araneae	42.1	Almquist, S. (1970). Thermal tolerances and preferences of some dune-living spiders. Oikos, 21, 230-235.
Pseudemoia entrecasteauxii	Squamata	42.1	Spellerberg (1972). Temperature tolerances of southeast australian reptiles examined in relation to reptile thermoregulatory behavior and distribution. Oecologia, 9, 23-46.
Paa spinosa	Anura	42.1	Yu, B. G., Zheng, R. Q., Zhang, Y., & Liu, C. T. (2010). Geographic variation in body size and sexual size dimorphism in the giant spiny frog Paa spinosa (Anura: Ranoidae). Journal of Natural History, 44(27-28), 1729-1741.

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
Ceratitis rosa	Diptera	42.2	Nyamukondiwa, C., & Terblanche, J. S. (2010). Within-generation variation of critical thermal limits in adult Mediterranean and Natal fruit flies Ceratitis capitata and Ceratitis rosa: thermal history affects short-term responses to temperature. Physiological Entomology, 35, 255-264.
Chamaeleo bitaeniatus	Squamata	42.2	Bennett, A. F. (2004). Thermoregulation in African chameleons Proc. Third Int. Conf. Comp. Phys. Biochem., 1275, 234-241
Takydromus sexlineatus	Squamata	42.2	Zhang, Y. P., & Ji, X. A. (2004). The thermal dependence of food assimilation and locomotor performance in southern grass lizards, Takydromus sexlineatus (Lacertidae). J. Therm. Biol., 29, 45-53.
Leptogenys sp.	Hymenoptera	42.25	Diamond, S. E., Sorger, M. D., Hulcr, J., Pelini, S. L., Del Toro, I., Hirsch, C., Oberg, E., & Dunn, R. R. (2012). Who likes it hot? A global analysis of the climatic, ecological, and evolutionary determinants of warming tolerance in ants. Global Change Biology, 18, 448-456.
Ponera pennsylvanica	Hymenoptera	42.3	Diamond, S. E., Sorger, M. D., Hulcr, J., Pelini, S. L., Del Toro, I., Hirsch, C., Oberg, E., & Dunn, R. R. (2012). Who likes it hot? A global analysis of the climatic, ecological, and evolutionary determinants of warming tolerance in ants. Global Change Biology, 18, 448-456.
Amphibolurus muricatus	Squamata	42.3	Spellerberg (1972). Temperature tolerances of southeast australian reptiles examined in relation to

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
			reptile thermoregulatory behavior and distribution. Oecologia, 9, 23-46.
Pseudemoia spenceri	Squamata	42.3	Spellerberg (1972). Temperature tolerances of southeast australian reptiles examined in relation to reptile thermoregulatory behavior and distribution. Oecologia, 9, 23-46.
Plestiodon gilberti	Squamata	42.3	Youssef, M. K., Adolph, S. C., & Richmond, J. Q. (2008). Evolutionarily conserved thermal biology across continents: the North American lizard Plestiodon gilberti (Scincidae) compared to Asian Plestiodon. Journal of Thermal Biology, 33(5), 308-312.
Lygus hesperus	Hemiptera	42.4	Cohen, A. C. (1982). Water and temperature relations of two hemipteran members of a predator-prey complex. Environmental Entomology, 11, 715-719.
Pseudonaja textilis	Squamata	42.4	Spellerberg (1972). Temperature tolerances of southeast australian reptiles examined in relation to reptile thermoregulatory behavior and distribution. Oecologia, 9, 23-46.
Moloch horridus	Squamata	42.5	Spellerberg (1972). Temperature tolerances of southeast australian reptiles examined in relation to reptile thermoregulatory behavior and distribution. Oecologia, 9, 23-46.
Tiliqua nigrolutea	Squamata	42.5	Spellerberg (1972). Temperature tolerances of southeast australian reptiles examined in relation to reptile thermoregulatory behavior and distribution. Oecologia, 9, 23-46.

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
Tlalocohyla smithi	Anura	42.5	Brattstrom, B. H. (1968). Thermal acclimation in anuran amphibians as a function of latitude and altitude. Comparative Biochemistry and Physiology, 24(1), 93-111.
Tarentola boettgeri	Squamata	42.6	Brown, R. P. (1996). Thermal biology of the gecko Tarentola boettgeri: Comparisons among populations from different elevations within Gran Canaria. Herpetologica, 52, 396-405.
Bathygobius fuscus	Perciformes	42.6	Eme, J., & Bennett, W. A. (2009). Critical thermal tolerance polygons of tropical marine fishes from Sulawesi, Indonesia. J. Therm. Biol., 34, 220-225.
Camponotus americanus	Hymenoptera	42.8	Diamond, S. E., Sorger, M. D., Hulcr, J., Pelini, S. L., Del Toro, I., Hirsch, C., Oberg, E., & Dunn, R. R. (2012). Who likes it hot? A global analysis of the climatic, ecological, and evolutionary determinants of warming tolerance in ants. Global Change Biology, 18, 448-456.
Tibellus oblongus	Araneae	42.8	Almquist, S. (1970). Thermal tolerances and preferences of some dune-living spiders. Oikos, 21, 230-235.
Sceloporus malachiticus	Squamata	42.8	Van Berkum, F. H. (1988). Latitudinal patterns of the thermal sensitivity of sprint speed in lizards. The American Naturalist, 132(3), 327-343.
Polyrhachis sp.	Hymenoptera	43	Diamond, S. E., Sorger, M. D., Hulcr, J., Pelini, S. L., Del Toro, I., Hirsch, C., Oberg, E., & Dunn, R. R. (2012). Who likes it hot? A global analysis of the climatic, ecological, and evolutionary determinants of

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
			warming tolerance in ants. Global Change Biology, 18, 448-456.
Tetraponera sp.	Hymenoptera	43	Diamond, S. E., Sorger, M. D., Hulcr, J., Pelini, S. L., Del Toro, I., Hirsch, C., Oberg, E., & Dunn, R. R. (2012). Who likes it hot? A global analysis of the climatic, ecological, and evolutionary determinants of warming tolerance in ants. Global Change Biology, 18, 448-456.
Tiliqua rugosa	Squamata	43	Bennett, A. F., & John-Alder, H. (1986). Thermal relations of some Australian skinks (sauria, scincidae). Copeia, 1986(1), 57-64.
Liolaemus robertmertensi	Squamata	43	Cruz, F. B., Fitzgerald, L. A., Espinoza, R. E., & Schulte, J. A. (2005). The importance of phylogenetic scale in tests of Bergmann's and Rapoport's rules: lessons from a clade of South American lizards. J. Evol. Biol., 18, 1559-1574.
Bathygobius sp1	Perciformes	43	Eme, J., & Bennett, W. A. (2009). Critical thermal tolerance polygons of tropical marine fishes from Sulawesi, Indonesia. J. Therm. Biol., 34, 220-225.
Eremias argus	Squamata	43	Li, H., Wang, Z., Mei, W. B., & Ji, X. (2009). Temperature acclimation affects thermal preference and tolerance in three Eremias lizards (Lacertidae). Current Zoology, 55, 258-265.
Imbrasia belina	Lepidoptera	43.1	Frears, S. L., Chown, S. L., & Webb, P. I. (1997). Behavioural thermoregulation in the mopane worm (lepidoptera). J. Therm. Biol., 22, 325-330.

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
Hemachatus haemachatus	Squamata	43.1	Alexander, G. J., & Brooks, R. (1999). Circannual rhythms of appetite and ecdysis in the elapid snake, Hemachatus haemachatus, appear to be endogenous. Copeia, 1999(1), 146-152.
Sceloporus variabilis	Squamata	43.1	Van Berkum, F. H. (1988). Latitudinal patterns of the thermal sensitivity of sprint speed in lizards. The American Naturalist, 132(3), 327-343.
Dipoena inornata	Araneae	43.2	Almquist, S. (1970). Thermal tolerances and preferences of some dune-living spiders. Oikos, 21, 230-235.
Takydromus sexlineatus	Squamata	43.2	Zhang, Y. P., & Ji, X. (2004). The thermal dependence of food assimilation and locomotor performance in southern grass lizards, Takydromus sexlineatus (Lacertidae). Journal of thermal Biology, 29(1), 45-53.
Takydromus stejnegeri	Squamata	43.2	Huang, S. P., & Tu, M. C. (2008). Heat tolerance and altitudinal distribution of a mountainous lizard, Takydromus hsuehshanensis, in Taiwan. Journal of Thermal Biology, 33(1), 48-56.
Cataulacus horridus	Hymenoptera	43.25	Diamond, S. E., Sorger, M. D., Hulcr, J., Pelini, S. L., Del Toro, I., Hirsch, C., Oberg, E., & Dunn, R. R. (2012). Who likes it hot? A global analysis of the climatic, ecological, and evolutionary determinants of warming tolerance in ants. Global Change Biology, 18, 448-456.
Crematogaster lineolata	Hymenoptera	43.25	Diamond, S. E., Sorger, M. D., Hulcr, J., Pelini, S. L., Del Toro, I., Hirsch, C., Oberg, E., & Dunn, R. R.

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
			(2012). Who likes it hot? A global analysis of the climatic, ecological, and evolutionary determinants of warming tolerance in ants. Global Change Biology, 18, 448-456.
Urosaurus ornatus	Squamata	43.3	Smith, G. R., & Ballinger, R. E. (1994). Thermal ecology of Sceloporus virgatus from southeastern Arizona, with comparison to Urosaurus ornatus. Journal of Herpetology, 28(1), 65-69.
Psammodromus algirus	Squamata	43.5	Bauwens, D. T., Garland, J., Castilla, A. M., & Damme, R. V. (1995). Evolution of sprint speed in lacertid lizards: morphological, physiological, and behavioral covariation. Evolution, 49, 848-863.
Bassiana duperreyi	Squamata	43.5	Spellerberg (1972) Temperature tolerances of southeast australian reptiles examined in relation to reptile thermoregulatory behavior and distribution. Oecologia, 9, 23-46.
Phrynosoma douglassii	Squamata	43.5	Prieto Jr, A. A., & Whitford, W. G. (1971). Physiological responses to temperature in the horned lizards, Phrynosoma cornutum and Phrynosoma douglassii. Copeia, 1971(3), 498-504.
Chamaeleo dilepis	Squamata	43.6	Bennett, A. F. (2004). Thermoregulation in African chameleons Proc. Third Int. Conf. Comp. Phys. Biochem., 1275, 234-241
Gambelia wislizennii	Squamata	43.6	Crowley, S. R. & Pietruszka, R. D. (1983). Aggressiveness and vocalization in the leopard lizard (Gambelia wislizennii): the influence of temperature. Anim. Behav., 81, 1055-1060.

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
Liolaemus kriegi	Squamata	43.67	Cruz, F. B., Fitzgerald, L. A., Espinoza, R. E., & Schulte, J. A. (2005). The importance of phylogenetic scale in tests of Bergmann's and Rapoport's rules: lessons from a clade of South American lizards. J. Evol. Biol., 18, 1559-1574.
Varanus varius	Squamata	43.7	Spellerberg (1972). Temperature tolerances of southeast australian reptiles examined in relation to reptile thermoregulatory behavior and distribution. Oecologia, 9, 23-46.
Tigriopus fulvus	Harpacticoida	43.7	Davenport, J., & Davenport, J. L. (2005). Effects of shore height, wave exposure and geographical distance on thermal niche width of intertidal fauna. Mar. Ecol. Prog. Ser., 292, 41-50.
Uta stansburiana	Squamata	43.7	Waldschmidt, S., & Tracy, C. R. (1983). Interactions between a lizard and its thermal environment: implications for sprint performance and space utilization in the lizard Uta stansburiana. Ecology, 64(3), 476-484.
Takydromus formosanus	Squamata	43.7	Huang, S. P., & Tu, M. C. (2008). Heat tolerance and altitudinal distribution of a mountainous lizard, Takydromus hsuehshanensis, in Taiwan. Journal of Thermal Biology, 33(1), 48-56.
Ameiva festiva	Squamata	43.7	Van Berkum, F. H. (1988). Latitudinal patterns of the thermal sensitivity of sprint speed in lizards. The American Naturalist, 132(3), 327-343.

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
Liolaemus capillitas	Squamata	43.7	Cruz, F. B., Fitzgerald, L. A., Espinoza, R. E., & Schulte, J. A. (2005). The importance of phylogenetic scale in tests of Bergmann's and Rapoport's rules: lessons from a clade of South American lizards. J. Evol. Biol., 18, 1559-1574.
Aenictus sp.	Hymenoptera	43.75	Diamond, S. E., Sorger, M. D., Hulcr, J., Pelini, S. L., Del Toro, I., Hirsch, C., Oberg, E., & Dunn, R. R. (2012). Who likes it hot? A global analysis of the climatic, ecological, and evolutionary determinants of warming tolerance in ants. Global Change Biology, 18, 448-456.
Gnamptogenys sp.	Hymenoptera	43.75	Diamond, S. E., Sorger, M. D., Hulcr, J., Pelini, S. L., Del Toro, I., Hirsch, C., Oberg, E., & Dunn, R. R. (2012). Who likes it hot? A global analysis of the climatic, ecological, and evolutionary determinants of warming tolerance in ants. Global Change Biology, 18, 448-456.
Pheidole sp.	Hymenoptera	43.75	Diamond, S. E., Sorger, M. D., Hulcr, J., Pelini, S. L., Del Toro, I., Hirsch, C., Oberg, E., & Dunn, R. R. (2012). Who likes it hot? A global analysis of the climatic, ecological, and evolutionary determinants of warming tolerance in ants. Global Change Biology, 18, 448-456.
Liolaemus rothi	Squamata	43.8	Cruz, F. B., Fitzgerald, L. A., Espinoza, R. E., & Schulte, J. A. (2005). The importance of phylogenetic scale in tests of Bergmann's and Rapoport's rules:

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
			lessons from a clade of South American lizards. J. Evol. Biol., 18, 1559-1574.
Amphibolurus decresii	Squamata	43.8	Spellerberg (1972). Temperature tolerances of southeast australian reptiles examined in relation to reptile thermoregulatory behavior and distribution. Oecologia, 9, 23-46.
Gehyra variegata	Squamata	43.8	Spellerberg (1972). Temperature tolerances of southeast australian reptiles examined in relation to reptile thermoregulatory behavior and distribution. Oecologia, 9, 23-46.
Liolaemus multimaculatus	Squamata	43.83	Cruz, F. B., Fitzgerald, L. A., Espinoza, R. E., & Schulte, J. A. (2005). The importance of phylogenetic scale in tests of Bergmann's and Rapoport's rules: lessons from a clade of South American lizards. J. Evol. Biol., 18, 1559-1574.
Liolaemus sp 3	Squamata	43.85	Cruz, F. B., Fitzgerald, L. A., Espinoza, R. E., & Schulte, J. A. (2005). The importance of phylogenetic scale in tests of Bergmann's and Rapoport's rules: lessons from a clade of South American lizards. J. Evol. Biol., 18, 1559-1574.
Lacerta agilis	Squamata	43.9	Bauwens, D. T., Garland, J., Castilla, A. M., & Damme, R. V. (1995). Evolution of sprint speed in lacertid lizards: morphological , physiological, and behavioral covariation. Evolution, 49, 848-863.

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
Zootoca vivipara	Squamata	43.9	Gvozdik, L. & Castilla, A. M. (2001). A comparative study of preferred body temperatures and critical thermal tolerance limits among populations of Zootoca vivipara (Squamata : Lacertidae) along an altitudinal gradient. J. Herpetol., 35, 486-492.
Liolaemus scrocchi	Squamata	43.91	Cruz, F. B., Fitzgerald, L. A., Espinoza, R. E., & Schulte, J. A. (2005). The importance of phylogenetic scale in tests of Bergmann's and Rapoport's rules: lessons from a clade of South American lizards. J. Evol. Biol., 18, 1559-1574.
Liolaemus boulengeri	Squamata	43.99	Cruz, F. B., Fitzgerald, L. A., Espinoza, R. E., & Schulte, J. A. (2005). The importance of phylogenetic scale in tests of Bergmann's and Rapoport's rules: lessons from a clade of South American lizards. J. Evol. Biol., 18, 1559-1574.
Camponotus chromaiodes	Hymenoptera	44	Diamond, S. E., Sorger, M. D., Hulcr, J., Pelini, S. L., Del Toro, I., Hirsch, C., Oberg, E., & Dunn, R. R. (2012). Who likes it hot? A global analysis of the climatic, ecological, and evolutionary determinants of warming tolerance in ants. Global Change Biology, 18, 448-456.
Messor bouvieri	Hymenoptera	44	Cerda, X., Retana, J., & Cros, S. (1998). Critical thermal limits in Mediterranean ant species: trade-off between mortality risk and foraging performance. Functional Ecology, 12, 45-55.
Messor capitatus	Hymenoptera	44	Cerda, X., Retana, J., & Cros, S. (1998). Critical thermal limits in Mediterranean ant species: trade-off

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
			between mortality risk and foraging performance. Functional Ecology, 12, 45-55.
Messor bouvieri	Hymenoptera	44	Cerda, X., Arnan, X., & Retana, J. (2013). Is competition a significant hallmark of ant (Hymenoptera: Formicidae) ecology. Myrmecological News, 18, 131-147.
Messor capitatus	Hymenoptera	44	Cerda, X., Arnan, X., & Retana, J. (2013). Is competition a significant hallmark of ant (Hymenoptera: Formicidae) ecology. Myrmecological News, 18, 131-147.
Polyrhachis furcata	Hymenoptera	44	Diamond, S. E., Sorger, M. D., Hulcr, J., Pelini, S. L., Del Toro, I., Hirsch, C., Oberg, E., & Dunn, R. R. (2012). Who likes it hot? A global analysis of the climatic, ecological, and evolutionary determinants of warming tolerance in ants. Global Change Biology, 18, 448-456.
Protomognathus americanus	Hymenoptera	44	Diamond, S. E., Sorger, M. D., Hulcr, J., Pelini, S. L., Del Toro, I., Hirsch, C., Oberg, E., & Dunn, R. R. (2012). Who likes it hot? A global analysis of the climatic, ecological, and evolutionary determinants of warming tolerance in ants. Global Change Biology, 18, 448-456.
Liolaemus chacoensis	Squamata	44.1	Cruz, F. B., Fitzgerald, L. A., Espinoza, R. E., & Schulte, J. A. (2005). The importance of phylogenetic scale in tests of Bergmann's and Rapoport's rules: lessons from a clade of South American lizards. J. Evol. Biol., 18, 1559-1574.

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
Takydromus hsuehshanensis	Squamata	44.1	Huang, S. P., & Tu, M. C. (2008). Heat tolerance and altitudinal distribution of a mountainous lizard, Takydromus hsuehshanensis, in Taiwan. Journal of Thermal Biology, 33(1), 48-56.
Zootoca vivipara	Squamata	44.1	Walkup, D. K., Ryberg, W. A., Fitzgerald, L., & Hibbitts, T. J. (2018). Occupancy and detection of an endemic habitat specialist, the dunes sagebrush lizard (sceloporus arenicolus). Herpetological Conservation and Biology, 13(3), 497-506.
Sceloporus occidentalis	Squamata	44.1	Van Berkum, F. H. (1988). Latitudinal patterns of the thermal sensitivity of sprint speed in lizards. The American Naturalist, 132(3), 327-343.
Liolaemus poecilochromus	Squamata	44.16	Cruz, F. B., Fitzgerald, L. A., Espinoza, R. E., & Schulte, J. A. (2005). The importance of phylogenetic scale in tests of Bergmann's and Rapoport's rules: lessons from a clade of South American lizards. J. Evol. Biol., 18, 1559-1574.
Myrmecocystus mexicanus	Hymenoptera	44.2	Kay, C. A. R., & Whitford, W. G. (1978). Critical thermal limits of desert honey ants: possible ecological implications. Physiological Zoology, 51, 206-213.
Podarcis muralis	Squamata	44.2	Bauwens, D. T., Garland, J., Castilla, A. M., & Damme, R. V. (1995). Evolution of sprint speed in lacertid lizards: morphological, physiological, and behavioral covariation. Evolution, 49, 848-863.

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
Cyprinodon variegatus	Cyprinodontiformes	44.2	Brett, J. R. (1970). in Marine Ecology, Vol. 1, Environmental Factors, ed. Kinne O (Wiley-Interscience, Chichester), pp. 515–616.
Myrmecocystus mexican	Hymenoptera	44.2	Hölldobler, B. (1981). Foraging and spatiotemporal territories in the honey ant Myrmecocystus mimicus Wheeler (Hymenoptera: Formicidae). Behavioral Ecology and Sociobiology, 9(4), 301-314.
Egernia striola	Squamata	44.2	Bennett, A. F., & John-Alder, H. (1986). Thermal relations of some Australian skinks (Sauria: Scincidae). Copeia, 1986(1), 57-64.
Cardiocondyla sp.	Hymenoptera	44.25	Diamond, S. E., Sorger, M. D., Hulcr, J., Pelini, S. L., Del Toro, I., Hirsch, C., Oberg, E., & Dunn, R. R. (2012). Who likes it hot? A global analysis of the climatic, ecological, and evolutionary determinants of warming tolerance in ants. Global Change Biology, 18, 448-456.
Odontoponera sp.	Hymenoptera	44.25	Diamond, S. E., Sorger, M. D., Hulcr, J., Pelini, S. L., Del Toro, I., Hirsch, C., Oberg, E., & Dunn, R. R. (2012). Who likes it hot? A global analysis of the climatic, ecological, and evolutionary determinants of warming tolerance in ants. Global Change Biology, 18, 448-456.
Pheidologeton sp.	Hymenoptera	44.25	Diamond, S. E., Sorger, M. D., Hulcr, J., Pelini, S. L., Del Toro, I., Hirsch, C., Oberg, E., & Dunn, R. R. (2012). Who likes it hot? A global analysis of the climatic, ecological, and evolutionary determinants of

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
			warming tolerance in ants. Global Change Biology, 18, 448-456.
Technomyrmex sp.	Hymenoptera	44.25	Diamond, S. E., Sorger, M. D., Hulcr, J., Pelini, S. L., Del Toro, I., Hirsch, C., Oberg, E., & Dunn, R. R. (2012). Who likes it hot? A global analysis of the climatic, ecological, and evolutionary determinants of warming tolerance in ants. Global Change Biology, 18, 448-456.
Temnothorax tuscaloosae	Hymenoptera	44.25	Diamond, S. E., Sorger, M. D., Hulcr, J., Pelini, S. L., Del Toro, I., Hirsch, C., Oberg, E., & Dunn, R. R. (2012). Who likes it hot? A global analysis of the climatic, ecological, and evolutionary determinants of warming tolerance in ants. Global Change Biology, 18, 448-456.
Tetramorium (Triglyphotrix)	Hymenoptera	44.25	Diamond, S. E., Sorger, M. D., Hulcr, J., Pelini, S. L., Del Toro, I., Hirsch, C., Oberg, E., & Dunn, R. R. (2012). Who likes it hot? A global analysis of the climatic, ecological, and evolutionary determinants of warming tolerance in ants. Global Change Biology, 18, 448-456.
Reticultermes flavipes	Coleoptera	44.3	Hu, X. P., & Appel, A. G. (2004). Seasonal variation of critical thermal limits and temperature tolerance in formosan and eastern subterranean termites (Isoptera: Rhinotermitidae). Environmental Entomology, 33, 197-205.
Micrathyria ocellata	Odonata	44.3	May, M. L. (1978). Thermal adaptations of dragonflies. Odonatologica, 7(1), 27-47.

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
Liolaemus albiceps	Squamata	44.33	Cruz, F. B., Fitzgerald, L. A., Espinoza, R. E., & Schulte, J. A. (2005). The importance of phylogenetic scale in tests of Bergmann's and Rapoport's rules: lessons from a clade of South American lizards. J. Evol. Biol., 18, 1559-1574.
Glossina pallidipes	Diptera	44.4	Terblanche, J. S., Sinclair, B. J., Klok, C. J., McFarlane, M. L., & Chown, S. L. (2005). The effects of acclimation on thermal tolerance, desiccation resistance and metabolic rate in Chirodica chalcoptera (Coleoptera: Chrysomelidae). Journal of Insect Physiology, 51(9), 1013-1023.
Liolaemus fitzingerii	Squamata	44.45	Cruz, F. B., Fitzgerald, L. A., Espinoza, R. E., & Schulte, J. A. (2005). The importance of phylogenetic scale in tests of Bergmann's and Rapoport's rules: lessons from a clade of South American lizards. J. Evol. Biol., 18, 1559-1574.
Liolaemus fitzingerii	Squamata	44.45	Medina, M., Scolaro, A., Mendez-De la Cruz, F., Sinervo, B., Miles, D. B., & Ibargüengoytía, N. (2012). Thermal biology of genus Liolaemus: a phylogenetic approach reveals advantages of the genus to survive climate change. Journal of Thermal Biology, 37(8), 579-586.
Liolaemus xanthoviridis	Squamata	44.48	Cruz, F. B., Fitzgerald, L. A., Espinoza, R. E., & Schulte, J. A. (2005). The importance of phylogenetic scale in tests of Bergmann's and Rapoport's rules: lessons from a clade of South American lizards. J. Evol. Biol., 18, 1559-1574.

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
Dolichoderus cuspidatus	Hymenoptera	44.5	Diamond, S. E., Sorger, M. D., Hulcr, J., Pelini, S. L., Del Toro, I., Hirsch, C., Oberg, E., & Dunn, R. R. (2012). Who likes it hot? A global analysis of the climatic, ecological, and evolutionary determinants of warming tolerance in ants. Global Change Biology, 18, 448-456.
Pheidologeton sp.	Hymenoptera	44.5	Diamond, S. E., Sorger, M. D., Hulcr, J., Pelini, S. L., Del Toro, I., Hirsch, C., Oberg, E., & Dunn, R. R. (2012). Who likes it hot? A global analysis of the climatic, ecological, and evolutionary determinants of warming tolerance in ants. Global Change Biology, 18, 448-456.
Tapinoma sessile	Hymenoptera	44.5	Diamond, S. E., Sorger, M. D., Hulcr, J., Pelini, S. L., Del Toro, I., Hirsch, C., Oberg, E., & Dunn, R. R. (2012). Who likes it hot? A global analysis of the climatic, ecological, and evolutionary determinants of warming tolerance in ants. Global Change Biology, 18, 448-456.
Tetramorium sp.	Hymenoptera	44.5	Diamond, S. E., Sorger, M. D., Hulcr, J., Pelini, S. L., Del Toro, I., Hirsch, C., Oberg, E., & Dunn, R. R. (2012). Who likes it hot? A global analysis of the climatic, ecological, and evolutionary determinants of warming tolerance in ants. Global Change Biology, 18, 448-456.
Liolaemus kingii	Squamata	44.5	Cruz, F. B., Fitzgerald, L. A., Espinoza, R. E., & Schulte, J. A. (2005). The importance of phylogenetic scale in tests of Bergmann's and Rapoport's rules:

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
			lessons from a clade of South American lizards. J. Evol. Biol., 18, 1559-1574.
Takydromus septentrionalis	Squamata	44.5	Yang, J., Sun, Y. Y., An, H., & Ji, X. (2008). Northern grass lizards (Takydromus septentrionalis) from different populations do not differ in thermal preference and thermal tolerance when acclimated under identical thermal conditions. Journal of Comparative Physiology B, 178(3), 343-349.
Liolaemus bibronii	Squamata	44.53	Cruz, F. B., Fitzgerald, L. A., Espinoza, R. E., & Schulte, J. A. (2005). The importance of phylogenetic scale in tests of Bergmann's and Rapoport's rules: lessons from a clade of South American lizards. J. Evol. Biol., 18, 1559-1574.
Liolaemus olongasta	Squamata	44.58	Cruz, F. B., Fitzgerald, L. A., Espinoza, R. E., & Schulte, J. A. (2005). The importance of phylogenetic scale in tests of Bergmann's and Rapoport's rules: lessons from a clade of South American lizards. J. Evol. Biol., 18, 1559-1574.
Liolaemus canqueli	Squamata	44.6	Cruz, F. B., Fitzgerald, L. A., Espinoza, R. E., & Schulte, J. A. (2005). The importance of phylogenetic scale in tests of Bergmann's and Rapoport's rules: lessons from a clade of South American lizards. J. Evol. Biol., 18, 1559-1574.

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
Liolaemus cf telsen	Squamata	44.6	Cruz, F. B., Fitzgerald, L. A., Espinoza, R. E., & Schulte, J. A. (2005). The importance of phylogenetic scale in tests of Bergmann's and Rapoport's rules: lessons from a clade of South American lizards. J. Evol. Biol., 18, 1559-1574.
Liolaemus darwinii	Squamata	44.68	Cruz, F. B., Fitzgerald, L. A., Espinoza, R. E., & Schulte, J. A. (2005). The importance of phylogenetic scale in tests of Bergmann's and Rapoport's rules: lessons from a clade of South American lizards. J. Evol. Biol., 18, 1559-1574.
Liolaemus quilmes	Squamata	44.69	Cruz, F. B., Fitzgerald, L. A., Espinoza, R. E., & Schulte, J. A. (2005). The importance of phylogenetic scale in tests of Bergmann's and Rapoport's rules: lessons from a clade of South American lizards. J. Evol. Biol., 18, 1559-1574.
Temnothorax curvispinosus	Hymenoptera	44.7	Diamond, S. E., Sorger, M. D., Hulcr, J., Pelini, S. L., Del Toro, I., Hirsch, C., Oberg, E., & Dunn, R. R. (2012). Who likes it hot? A global analysis of the climatic, ecological, and evolutionary determinants of warming tolerance in ants. Global Change Biology, 18, 448-456.
Liolaemus multicolor	Squamata	44.7	Cruz, F. B., Fitzgerald, L. A., Espinoza, R. E., & Schulte, J. A. (2005). The importance of phylogenetic scale in tests of Bergmann's and Rapoport's rules: lessons from a clade of South American lizards. J. Evol. Biol., 18, 1559-1574.

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
Sceloporus graciosus	Squamata	44.7	Vanberkum, F. H. (1988). Latitudinal patterns of the thermal sensitivity of sprint speed in lizards. Am. Nat., 132, 327-343.
Micrathyria eximia	Odonata	44.7	May, M. L. (1978). Thermal adaptations of dragonflies. Odonatologica, 7(1), 27-47.
Laudakia stellio	Squamata	44.7	Van Damme, R., & Vanhooydonck, B. (2001). Origins of interspecific variation in lizard sprint capacity. Functional Ecology, 15(2), 186-202.
Sceloporus graciosus	Squamata	44.7	Tsuji, J. S., Huey, R. B., van Berkum, F. H., Garland, T., & Shaw, R. G. (1989). Locomotor performance of hatchling fence lizards (Sceloporus occidentalis): quantitative genetics and morphometric correlates. Evolutionary Ecology, 3(3), 240-252.
Ctenotus taeniolatus	Squamata	44.7	Bennett, A. F., & John-Alder, H. (1986). Thermal relations of some Australian skinks (Sauria: Scincidae). Copeia, 1986(1), 57-64.
Liolaemus sp 2	Squamata	44.7	Cruz, F. B., Fitzgerald, L. A., Espinoza, R. E., & Schulte, J. A. (2005). The importance of phylogenetic scale in tests of Bergmann's and Rapoport's rules: lessons from a clade of South American lizards. J. Evol. Biol., 18, 1559-1574.
Platysaurus intermedius	Squamata	44.8	Lailvaux, S. P., Alexander, G. J., & Whiting, M. J. (2003). Sex-based differences and similarities in locomotor performance, thermal preferences, and escape behaviour in the lizard Platysaurus intermedius wilhelmi. Physiological and Biochemical Zoology, 76(4), 511-521.

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
Amphibolurus diemensis	Squamata	44.8	Spellerberg (1972). Temperature tolerances of southeast australian reptiles examined in relation to reptile thermoregulatory behavior and distribution. Oecologia, 9, 23-46.
Macromia taeniolata	Odonata	44.8	May, M. L. (1978). Thermal adaptations of dragonflies. Odonatologica, 7(1), 27-47.
Platysaurus intermedius wilhelmi	Squamata	44.8	Lailvaux, S. P., Alexander, G. J., & Whiting, M. J. (2003). Sex-based differences and similarities in locomotor performance, thermal preferences, and escape behaviour in the lizard Platysaurus intermedius wilhelmi. Physiological and Biochemical Zoology, 76(4), 511-521.
Reticulitermes flavipes	Isoptera	44.85	Hu, X. P., & Appel, A. G. (2004). Seasonal variation of critical thermal limits and temperature tolerance in Formosan and eastern subterranean termites (Isoptera: Rhinotermitidae). Environmental Entomology, 33(2), 197-205.
Liolaemus melanops	Squamata	44.94	Cruz, F. B., Fitzgerald, L. A., Espinoza, R. E., & Schulte, J. A. (2005). The importance of phylogenetic scale in tests of Bergmann's and Rapoport's rules: lessons from a clade of South American lizards. J. Evol. Biol., 18, 1559-1574.
Liolaemus irregularis	Squamata	44.98	Cruz, F. B., Fitzgerald, L. A., Espinoza, R. E., & Schulte, J. A. (2005). The importance of phylogenetic scale in tests of Bergmann's and Rapoport's rules: lessons from a clade of South American lizards. J. Evol. Biol., 18, 1559-1574.

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
Camponotus sp.	Hymenoptera	45	Diamond, S. E., Sorger, M. D., Hulcr, J., Pelini, S. L., Del Toro, I., Hirsch, C., Oberg, E., & Dunn, R. R. (2012). Who likes it hot? A global analysis of the climatic, ecological, and evolutionary determinants of warming tolerance in ants. Global Change Biology, 18, 448-456.
Dolichoderus beccarii	Hymenoptera	45	Diamond, S. E., Sorger, M. D., Hulcr, J., Pelini, S. L., Del Toro, I., Hirsch, C., Oberg, E., & Dunn, R. R. (2012). Who likes it hot? A global analysis of the climatic, ecological, and evolutionary determinants of warming tolerance in ants. Global Change Biology, 18, 448-456.
Polyrhachis bihamata	Hymenoptera	45	Diamond, S. E., Sorger, M. D., Hulcr, J., Pelini, S. L., Del Toro, I., Hirsch, C., Oberg, E., & Dunn, R. R. (2012). Who likes it hot? A global analysis of the climatic, ecological, and evolutionary determinants of warming tolerance in ants. Global Change Biology, 18, 448-456.
Temnothorax curvispinosus	Hymenoptera	45	Diamond, S. E., Sorger, M. D., Hulcr, J., Pelini, S. L., Del Toro, I., Hirsch, C., Oberg, E., & Dunn, R. R. (2012). Who likes it hot? A global analysis of the climatic, ecological, and evolutionary determinants of warming tolerance in ants. Global Change Biology, 18, 448-456.
Laudakia stellio	Squamata	45	Hertz, P. E., & Huey, R. B. (1983) Homage to Santa Anita: thermal sensitivity of sprint speed in agamid lizards. Evolution, 37, 1075-1084.

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
Liolaemus sp 1	Squamata	45	Cruz, F. B., Fitzgerald, L. A., Espinoza, R. E., & Schulte, J. A. (2005). The importance of phylogenetic scale in tests of Bergmann's and Rapoport's rules: lessons from a clade of South American lizards. J. Evol. Biol., 18, 1559-1574.
Liolaemus cf._elongatus	Squamata	45.1	Cruz, F. B., Fitzgerald, L. A., Espinoza, R. E., & Schulte, J. A. (2005). The importance of phylogenetic scale in tests of Bergmann's and Rapoport's rules: lessons from a clade of South American lizards. J. Evol. Biol., 18, 1559-1574.
Misumenops asperatus	Araneae	45.1	Schmalhofer, V. R. (1999). Thermal tolerances and preferences of the crab spiders Misumenops asperatus and Misumenoides formosipes (Araneae, Thomisidae). J. Arachnol., 27, 470-480.
Ctenotus regius	Squamata	45.1	Bennett, A. F., & John-Alder, H. (1986). Thermal relations of some Australian skinks (Sauria: Scincidae). Copeia, 1986(1), 57-64.
Cnemidophorus tigris	Squamata	45.1	Van Berkum, F. H. (1988). Latitudinal patterns of the thermal sensitivity of sprint speed in lizards. The American Naturalist, 132(3), 327-343.
Liolaemus riojanus	Squamata	45.2	Cruz, F. B., Fitzgerald, L. A., Espinoza, R. E., & Schulte, J. A. (2005). The importance of phylogenetic scale in tests of Bergmann's and Rapoport's rules: lessons from a clade of South American lizards. J. Evol. Biol., 18, 1559-1574.

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
Formica perpilosa	Hymenoptera	45.2	Schumacher, A., & Whitford, W. G. (1974). The foraging ecology of two species of Chihuahuan desert ants: Formica perpilosa andTrachyrmyrmex smithi neomexicanus (Hymenoptera Formicidae). Insectes Sociaux, 21(3), 317-330.
Taeniopoda eques	Orthoptera	45.2	Whitman, D. W. (1987). Thermoregulation and daily activity patterns in a black desert grasshopper, Taeniopoda eques. Animal Behaviour, 35(6), 1814-1826.
Liolaemus petrophilus	Squamata	45.23	Cruz, F. B., Fitzgerald, L. A., Espinoza, R. E., & Schulte, J. A. (2005). The importance of phylogenetic scale in tests of Bergmann's and Rapoport's rules: lessons from a clade of South American lizards. J. Evol. Biol., 18, 1559-1574.
Anoplolepis gracilipes	Hymenoptera	45.25	Diamond, S. E., Sorger, M. D., Hulcr, J., Pelini, S. L., Del Toro, I., Hirsch, C., Oberg, E., & Dunn, R. R. (2012). Who likes it hot? A global analysis of the climatic, ecological, and evolutionary determinants of warming tolerance in ants. Global Change Biology, 18, 448-456.
Tetramorium sp.	Hymenoptera	45.25	Diamond, S. E., Sorger, M. D., Hulcr, J., Pelini, S. L., Del Toro, I., Hirsch, C., Oberg, E., & Dunn, R. R. (2012). Who likes it hot? A global analysis of the climatic, ecological, and evolutionary determinants of warming tolerance in ants. Global Change Biology, 18, 448-456.

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
Liza vaigiensis	Mugiliformes	45.3	Eme, J., & Bennett, W. A. (2009). Critical thermal tolerance polygons of tropical marine fishes from Sulawesi, Indonesia. J. Therm. Biol., 34, 220-225.
Reticultermes flavipes	Blattodea	45.4	Sponsler, R. C., & Appel, A. G. (1991). Temperature tolerances of the formosan and eastern subterranean termites (Isoptera: Rhinotermitidae). Journal of Thermal Biology, 16, 41-44.
Micrathyria aequalis	Odonata	45.4	May, M. L. (1978). Thermal adaptations of dragonflies. Odonatologica, 7(1), 27-47.
Camponotus (Colobopsis; golden gaster)	Hymenoptera	45.5	Diamond, S. E., Sorger, M. D., Hulcr, J., Pelini, S. L., Del Toro, I., Hirsch, C., Oberg, E., & Dunn, R. R. (2012). Who likes it hot? A global analysis of the climatic, ecological, and evolutionary determinants of warming tolerance in ants. Global Change Biology, 18, 448-456.
Crematogaster sp.	Hymenoptera	45.5	Diamond, S. E., Sorger, M. D., Hulcr, J., Pelini, S. L., Del Toro, I., Hirsch, C., Oberg, E., & Dunn, R. R. (2012). Who likes it hot? A global analysis of the climatic, ecological, and evolutionary determinants of warming tolerance in ants. Global Change Biology, 18, 448-456.
Dolichoderus cf. cuspidatus	Hymenoptera	45.5	Diamond, S. E., Sorger, M. D., Hulcr, J., Pelini, S. L., Del Toro, I., Hirsch, C., Oberg, E., & Dunn, R. R. (2012). Who likes it hot? A global analysis of the climatic, ecological, and evolutionary determinants of warming tolerance in ants. Global Change Biology, 18, 448-456.

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
Psammodromus hispanicus	Squamata	45.5	Bauwens, D. T., Garland, J., Castilla, A. M., & Damme, R. V. (1995). Evolution of sprint speed in lacertid lizards: morphological, physiological, and behavioral covariation. Evolution, 49, 848-863.
Pachydiplax longipennis	Odonata	45.5	May, M. L. (1978). Thermal adaptations of dragonflies. Odonatologica, 7(1), 27-47.
Ctenotus uber	Squamata	45.5	Bennett, A. F., & John-Alder, H. (1986). Thermal relations of some Australian skinks (Sauria: Scincidae). Copeia, 1986(1), 57-64.
Liolaemus scapularis	Squamata	45.57	Cruz, F. B., Fitzgerald, L. A., Espinoza, R. E., & Schulte, J. A. (2005). The importance of phylogenetic scale in tests of Bergmann's and Rapoport's rules: lessons from a clade of South American lizards. J. Evol. Biol., 18, 1559-1574.
Coptotermes formosanus	Blattodea	45.6	Hu, X. P. & Appel, A. G. (2004). Seasonal variation of critical thermal limits and temperature tolerance in formosan and eastern subterranean termites (Isoptera: Rhinotermitidae). Environmental Entomology, 33, 197-205.
Osmoderma eremicola	Coleoptera	45.6	Renault, D., Vernon, P., & Vannier, G. (2005). Critical thermal maximum and body water loss in first instar larvae of three Cetoniidae species (Coleoptera). Journal of Thermal Biology, 30, 611-617.
Erythemis credula	Odonata	45.6	May, M. L. (1978). Thermal adaptations of dragonflies. Odonatologica, 7(1), 27-47.

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
Liolaemus cuyanus	Squamata	45.7	Cruz, F. B., Fitzgerald, L. A., Espinoza, R. E., & Schulte, J. A. (2005). The importance of phylogenetic scale in tests of Bergmann's and Rapoport's rules: lessons from a clade of South American lizards. J. Evol. Biol., 18, 1559-1574.
Liolaemus scapularis	Squamata	45.73	Van Berkum, F. H. (1988). Latitudinal patterns of the thermal sensitivity of sprint speed in lizards. The American Naturalist, 132(3), 327-343.
GM-10-261	Hymenoptera	45.75	Diamond, S. E., Sorger, M. D., Hulcr, J., Pelini, S. L., Del Toro, I., Hirsch, C., Oberg, E., & Dunn, R. R. (2012). Who likes it hot? A global analysis of the climatic, ecological, and evolutionary determinants of warming tolerance in ants. Global Change Biology, 18, 448-456.
Tapinoma sp.	Hymenoptera	45.75	Diamond, S. E., Sorger, M. D., Hulcr, J., Pelini, S. L., Del Toro, I., Hirsch, C., Oberg, E., & Dunn, R. R. (2012). Who likes it hot? A global analysis of the climatic, ecological, and evolutionary determinants of warming tolerance in ants. Global Change Biology, 18, 448-456.
Temnothorax longispinosus	Hymenoptera	45.75	Diamond, S. E., Sorger, M. D., Hulcr, J., Pelini, S. L., Del Toro, I., Hirsch, C., Oberg, E., & Dunn, R. R. (2012). Who likes it hot? A global analysis of the climatic, ecological, and evolutionary determinants of warming tolerance in ants. Global Change Biology, 18, 448-456.

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
Coptotermes formosanus	Blattodea	45.9	Hu, X. P., & Appel, A. G. (2004). Seasonal variation of critical thermal limits and temperature tolerance in Formosan and eastern subterranean termites (Isoptera: Rhinotermitidae). Environmental Entomology, 33(2), 197-205.
Liolaemus pseudoanomalus	Squamata	45.93	Cruz, F. B., Fitzgerald, L. A., Espinoza, R. E., & Schulte, J. A. (2005). The importance of phylogenetic scale in tests of Bergmann's and Rapoport's rules: lessons from a clade of South American lizards. J. Evol. Biol., 18, 1559-1574.
Aphaenogaster senilis	Hymenoptera	46	Cerda, X., Retana, J., & Cros, S. (1998). Critical thermal limits in Mediterranean ant species: trade-off between mortality risk and foraging performance. Functional Ecology, 12, 45-55.
Camponotus sylvaticus	Hymenoptera	46	Cerda, X., Retana, J., & Cros, S. (1998). Critical thermal limits in Mediterranean ant species: trade-off between mortality risk and foraging performance. Functional Ecology, 12, 45-55.
Formica subsericea	Hymenoptera	46	Diamond, S. E., Sorger, M. D., Hulcr, J., Pelini, S. L., Del Toro, I., Hirsch, C., Oberg, E., & Dunn, R. R. (2012). Who likes it hot? A global analysis of the climatic, ecological, and evolutionary determinants of warming tolerance in ants. Global Change Biology, 18, 448-456.
Lytta vulnerata	Coleoptera	46	Cohen, A. C., & Pinto, J. D. (1977). An evaluation of xeric adaptiveness of several species of

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
			blister beetles (Meloidae). Annals of the Entomological Society of America, 710, 741-749.
Monomorium floricola	Hymenoptera	46	Diamond, S. E., Sorger, M. D., Hulcr, J., Pelini, S. L., Del Toro, I., Hirsch, C., Oberg, E., & Dunn, R. R. (2012). Who likes it hot? A global analysis of the climatic, ecological, and evolutionary determinants of warming tolerance in ants. Global Change Biology, 18, 448-456.
Myrmicaria sp.	Hymenoptera	46	Diamond, S. E., Sorger, M. D., Hulcr, J., Pelini, S. L., Del Toro, I., Hirsch, C., Oberg, E., & Dunn, R. R. (2012). Who likes it hot? A global analysis of the climatic, ecological, and evolutionary determinants of warming tolerance in ants. Global Change Biology, 18, 448-456.
Tetramorium sp.	Hymenoptera	46	Diamond, S. E., Sorger, M. D., Hulcr, J., Pelini, S. L., Del Toro, I., Hirsch, C., Oberg, E., & Dunn, R. R. (2012). Who likes it hot? A global analysis of the climatic, ecological, and evolutionary determinants of warming tolerance in ants. Global Change Biology, 18, 448-456.
Aphanenogaster senilis	Hymenoptera	46	Cerda, X., Arnan, X., & Retana, J. (2013). Is competition a significant hallmark of ant (Hymenoptera: Formicidae) ecology. Myrmecological News, 18, 131-147.
Camponotus slyvaticus	Hymenoptera	46	Cerda, X., Arnan, X., & Retana, J. (2013). Is competition a significant hallmark of ant (Hymenoptera:

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
			Formicidae) ecology. Myrmecological News, 18, 131-147.
Crematogaster lineolata	Hymenoptera	46.1	Diamond, S. E., Sorger, M. D., Hulcr, J., Pelini, S. L., Del Toro, I., Hirsch, C., Oberg, E., & Dunn, R. R. (2012). Who likes it hot? A global analysis of the climatic, ecological, and evolutionary determinants of warming tolerance in ants. Global Change Biology, 18, 448-456.
Myrmecocystus romainei	Hymenoptera	46.1	Kay, C. A. R., & Whitford, W. G. (1978). Critical thermal limits of desert honey ants: possible ecological implications. Physiological Zoology, 51, 206-213.
Liolaemus koslowskyi	Squamata	46.1	Cruz, F. B., Fitzgerald, L. A., Espinoza, R. E., & Schulte, J. A. (2005). The importance of phylogenetic scale in tests of Bergmann's and Rapoport's rules: lessons from a clade of South American lizards. J. Evol. Biol., 18, 1559-1574.
Myrmecocystus romainei	Hymenoptera	46.1	Hölldobler, B. (1981). Foraging and spatiotemporal territories in the honey ant Myrmecocystus mimicus Wheeler (Hymenoptera: Formicidae). Behavioral Ecology and Sociobiology, 9(4), 301-314.
Liolaemus laurenti	Squamata	46.18	Cruz, F. B., Fitzgerald, L. A., Espinoza, R. E., & Schulte, J. A. (2005). The importance of phylogenetic scale in tests of Bergmann's and Rapoport's rules: lessons from a clade of South American lizards. J. Evol. Biol., 18, 1559-1574.

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
Camponotus (Colobopsis; red heads)	Hymenoptera	46.25	Diamond, S. E., Sorger, M. D., Hulcr, J., Pelini, S. L., Del Toro, I., Hirsch, C., Oberg, E., & Dunn, R. R. (2012). Who likes it hot? A global analysis of the climatic, ecological, and evolutionary determinants of warming tolerance in ants. Global Change Biology, 18, 448-456.
Crematogaster lineolata	Hymenoptera	46.25	Diamond, S. E., Sorger, M. D., Hulcr, J., Pelini, S. L., Del Toro, I., Hirsch, C., Oberg, E., & Dunn, R. R. (2012). Who likes it hot? A global analysis of the climatic, ecological, and evolutionary determinants of warming tolerance in ants. Global Change Biology, 18, 448-456.
Dolichoderus beccarii	Hymenoptera	46.25	Diamond, S. E., Sorger, M. D., Hulcr, J., Pelini, S. L., Del Toro, I., Hirsch, C., Oberg, E., & Dunn, R. R. (2012). Who likes it hot? A global analysis of the climatic, ecological, and evolutionary determinants of warming tolerance in ants. Global Change Biology, 18, 448-456.
Coptotermes formosanus	Blattodea	46.3	Sponsler, R. C., & Appel, A. G. (1991). Temperature tolerances of the formosan and eastern subterranean termites (Isoptera: Rhinotermitidae). Journal of Thermal Biology, 16, 41-44.
Tramea walkeri	Odonata	46.3	May, M. L. (1978). Thermal adaptations of dragonflies. Odonatologica, 7(1), 27-47.
Erthemis simplicicollis	Odonata	46.5	May, M. L. (1978). Thermal adaptations of dragonflies. Odonatologica, 7(1), 27-47.

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
Sitophilus zeamais	Coleoptera	46.6	Fleurat-Lessard, F., & Dupuis, S. A. (2010). Comparative analysis of upper thermal tolerance and CO2 production rate during heat shock in two different European strains of Sitophilus zeamais (Coleoptera: Curculionidae). Journal of Stored Products Research, 46, 20-27.
Hodotermes mossambicus	Isoptera	46.69	Mitchell, J. D., Hewitt, P. H., & van der Linde, T. C. D. K. (1993). Critical thermal limits and temperature tolerance in the harvester termite Hodotermes mossambicus (Hagen). Journal of Insect Physiology, 39, 523-528.
Alphitobius diaperinus	Coleoptera	46.75	Salin, C., Vernon, P., & Vannier, G. (1998). The supercooling and high temperature stupor points of the adult lesser mealworm Alphitobius diaperinus (Coleoptera: Tenebrionidae). Journal of Stored Products Research, 34, 385-394.
Formica polyctena	Hymenoptera	46.8	Gehring, W. J., & Wehner, R. (1995). Heat shock protein synthesis and thermotolerance in Cataglyphis, an ant from the Sahara desert. Proc. Natl. Acad. Sci. USA., 92, 2994-2998.
Erythemis plebeja	Odonata	46.8	May, M. L. (1978). Thermal adaptations of dragonflies. Odonatologica, 7(1), 27-47.
Tramea carolina	Odonata	46.8	May, M. L. (1978). Thermal adaptations of dragonflies. Odonatologica, 7(1), 27-47.
Onymacris marginipennis	Coleoptera	47	Roberts, C. S., Seely, M. K., Ward, D., Mitchell, D., & Campbell, J. D. (1991). Body temperature of Namib Desert tenebrionid beetles: their relationship in

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
			laboratory and field. Physiological Entomology, 16, 463-475.
Cysteodemus armatus	Coleoptera	47.1	Cohen, A. C. & Pinto, J. D. (1977). An evaluation of xeric adaptiveness of several species of blister beetles (Meloidae). Annals of the Entomological Society of America, 710, 741-749.
Trapelus savignyi	Squamata	47.2	Hertz, P. E., & Huey, R. B. (1983). Homage to Santa Anita: thermal sensitivity of sprint speed in agamid lizards. Evolution, 37, 1075-1084.
Trapelus savignyi	Squamata	47.2	Van Damme, R., & Vanhooydonck, B. (2001). Origins of interspecific variation in lizard sprint capacity. Functional Ecology, 15(2), 186-202.
Monomorium pharaonis	Hymenoptera	47.25	Diamond, S. E., Sorger, M. D., Hulcr, J., Pelini, S. L., Del Toro, I., Hirsch, C., Oberg, E., & Dunn, R. R. (2012). Who likes it hot? A global analysis of the climatic, ecological, and evolutionary determinants of warming tolerance in ants. Global Change Biology, 18, 448-456.
Hadotermes mossambicus	Isoptera	47.27	Mitchell, J. D., Hewitt, P. H., & van der Linde, T. C. D. K. (1993). Critical thermal limits and temperature tolerance in the harvester termite Hodotermes mossambicus (Hagen). Journal of Insect Physiology, 39, 523-528.

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
Liolaemus abaucan	Squamata	47.3	Cruz, F. B., Fitzgerald, L. A., Espinoza, R. E., & Schulte, J. A. (2005). The importance of phylogenetic scale in tests of Bergmann's and Rapoport's rules: lessons from a clade of South American lizards. J. Evol. Biol., 18, 1559-1574.
Arenivaga investigata	Blattodea	47.4	Cohen, A. C., & Cohen, J. L. (1981). Microclimate, temperature and water relations of two species of desert cockroaches. Comparative Biochemistry and Physiology Part A: Physiology, 69, 165-167.
Myrmecocystus depilis	Hymenoptera	47.4	Kay, C. A. R., & Whitford, W. G. (1978). Critical thermal limits of desert honey ants: possible ecological implications. Physiological Zoology, 51, 206-213.
Onymacris marginipennis	Coleoptera	47.4	Roberts, C. S., et al. (1991). Body temperature of namib desert tenebrionid beetles - their relationship in laboratory and field. Physiol. Entomol., 16, 463-475.
Myrmecocystus depilis	Hymenoptera	47.4	Hölldobler, B. (1981). Foraging and spatiotemporal territories in the honey ant Myrmecocystus mimicus Wheeler (Hymenoptera: Formicidae). Behavioral Ecology and Sociobiology, 9(4), 301-314.
Dipsosaurus dorsalis	Squamata	47.5	Bauwens, D. T., Garland, J., Castilla, A. M., & Damme, R. V. (1995). Evolution of sprint speed in lacertid lizards: morphological, physiological, and behavioral covariation. Evolution, 49, 848-863.

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
Anaphes ovijentatus	Hymenoptera	47.6	Jackson, C. J., & Cohen, A. C. (1984). Temperature and water relations of a parasitic wasp in its free-living adult stage and its phytophagous host. Comparative Biochemistry and Physiology Part A: Physiology, 78, 437-440.
Leucophaea maderae	Blattodea	47.6	Appel, A. G., Reierson, D. A., & Rust, M. K. (1983). Comparative water relations and temperature sensitivity of cockroaches Comparative Biochemistry and Physiology Part A: Physiology, 74, 357-361.
Tramea cophysa	Odonata	47.6	May, M. L. (1978). Thermal adaptations of dragonflies. Odonatologica, 7(1), 27-47.
Myrmecocystus mimicus	Hymenoptera	47.7	Kay, C. A. R., & Whitford, W. G. (1978). Critical thermal limits of desert honey ants: possible ecological implications. Physiological Zoology, 51, 206-213.
Myrmecocystus mimicu	Hymenoptera	47.7	Hölldobler, B. (1981). Foraging and spatiotemporal territories in the honey ant Myrmecocystus mimicus Wheeler (Hymenoptera: Formicidae). Behavioral Ecology and Sociobiology, 9(4), 301-314.
Crematogaster (big; yellow)	Hymenoptera	47.75	Diamond, S. E., Sorger, M. D., Hulcr, J., Pelini, S. L., Del Toro, I., Hirsch, C., Oberg, E., & Dunn, R. R. (2012). Who likes it hot? A global analysis of the climatic, ecological, and evolutionary determinants of warming tolerance in ants. Global Change Biology, 18, 448-456.

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
Crematogaster inflata	Hymenoptera	47.75	Diamond, S. E., Sorger, M. D., Hulcr, J., Pelini, S. L., Del Toro, I., Hirsch, C., Oberg, E., & Dunn, R. R. (2012). Who likes it hot? A global analysis of the climatic, ecological, and evolutionary determinants of warming tolerance in ants. Global Change Biology, 18, 448-456.
Geocoris punctipes	Hemiptera	47.8	Cohen, A. C. (1982). Water and temperature relations of two hemipteran members of a predator-prey complex. Environmental Entomology, 11, 715-719.
Phrynosoma cornutum	Squamata	47.91	Prieto Jr, A. A., & Whitford, W. G. (1971). Physiological responses to temperature in the horned lizards, Phrynosoma cornutum and Phrynosoma douglassii. Copeia, 1971(3), 498-504.
Camponotus cruentatus	Hymenoptera	48	Cerda, X., Retana, J., & Cros, S. (1998). Critical thermal limits in Mediterranean ant species: trade-off between mortality risk and foraging performance. Functional Ecology, 12, 45-55.
Leucophaea maderae	Blattodea	48	Cohen, A. C., & Cohen, J. L. (1981). Microclimate, temperature and water relations of two species of desert cockroaches. Comparative Biochemistry and Physiology Part A: Physiology, 69, 165-167.
Camponotus foreli	Hymenoptera	48	Cerda, X., Retana, J., & Cros, S. (1998). Critical thermal limits in Mediterranean ant species: trade-off between mortality risk and foraging performance. Functional Ecology, 12, 45-55.

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
Crematogaster sp.	Hymenoptera	48	Diamond, S. E., Sorger, M. D., Hulcr, J., Pelini, S. L., Del Toro, I., Hirsch, C., Oberg, E., & Dunn, R. R. (2012). Who likes it hot? A global analysis of the climatic, ecological, and evolutionary determinants of warming tolerance in ants. Global Change Biology, 18, 448-456.
Onymacris bicolor	Coleoptera	48	Roberts, C. S., Seely, M. K., Ward, D., Mitchell, D., & Campbell, J. D. (1991). Body temperature of Namib Desert tenebrionid beetles: their relationship in laboratory and field. Physiological Entomology, 16, 463-475.
Hodotermes mossambicus	Isoptera	48	Mitchell, J. D., Hewitt, P. H., & Vanderlinde, T. C. D. K. (1993). Critical thermal limits and temperature tolerance in the harvester termite Hodotermes mossambicus (Hagen). J. Insect Physiol., 39, 523-528.
Camponotus cruentatus	Hymenoptera	48	Cerda, X., Arnan, X., & Retana, J. (2013). Is competition a significant hallmark of ant (Hymenoptera: Formicidae) ecology. Myrmecological News, 18, 131-147.
Plagiolepis pygmaea	Hymenoptera	48	Cerda, X., Arnan, X., & Retana, J. (2013). Is competition a significant hallmark of ant (Hymenoptera: Formicidae) ecology. Myrmecological News, 18, 131-147.
Imbrasia belina	Lepidoptera	48.2	Frears, S. L., Chown, S. L., & Webb, P. I. (1997). Behavioural thermoregulation in the mopane worm (Lepidoptera). Journal of Thermal Biology, 22, 325-330.

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
Misumenoides formosipes	Araneae	48.2	Schmalhofer, V. R. (1999). Thermal tolerances and preferences of the crab spiders Misumenops asperatus and Misumenoides formosipes (Araneae, Thomisidae). J. Arachnol., 27, 470-480.
Liolaemus salinicola	Squamata	48.21	Cruz, F. B., Fitzgerald, L. A., Espinoza, R. E., & Schulte, J. A. (2005). The importance of phylogenetic scale in tests of Bergmann's and Rapoport's rules: lessons from a clade of South American lizards. J. Evol. Biol., 18, 1559-1574.
Anoplolepis custodiens	Hymenoptera	48.3	De Bie, G., & Hewitt, P. H. (1990). Thermal responses of the semi-arid zone ants Ocymyrmex weitzeckeri (Emery) and Anoplolepis custodiens (Smith). Journal of the Entomological Society of Southern Africa, 53, 65-73.
Epicauta puncticollis	Coleoptera	48.5	Cohen, A. C., & Pinto, J. D. (1977). An evaluation of xeric adaptiveness of several species of blister beetles (Meloidae). Annals of the Entomological Society of America, 710, 741-749.
Epicauta puncticollis	Coleoptera	48.5	Roberts, C. S., Seely, M. K., Ward, D., Mitchell, D., & Campbell, J. D. (1991). Body temperature of Namib Desert tenebrionid beetles: their relationship in laboratory and field. Physiological Entomology, 16, 463-475.
Eupompha elegans	Coleoptera	48.5	Cohen, A. C., & Pinto, J. D. (1977). An evaluation of xeric adaptiveness of several species of blister beetles (Meloidae). Annals of the Entomological Society of America, 710, 741-749.

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
Gnorimus nobilis	Coleoptera	48.5	Renault, D., Vernon, P., & Vannier, G. (2005). Critical thermal maximum and body water loss in first instar larvae of three Cetoniidae species (Coleoptera). Journal of Thermal Biology, 30, 611-617.
Tauriphila argo	Odonata	48.5	May, M. L. (1978). Thermal adaptations of dragonflies. Odonatologica, 7(1), 27-47.
Onymacris plana	Coleoptera	48.9	Roberts, C. S., et al. (1991). Body temperature of namib desert tenebrionid beetles - their relationship in laboratory and field. Physiol. Entomol., 16, 463-475.
Monomorium floricola	Hymenoptera	49	Diamond, S. E., Sorger, M. D., Hulcr, J., Pelini, S. L., Del Toro, I., Hirsch, C., Oberg, E., & Dunn, R. R. (2012). Who likes it hot? A global analysis of the climatic, ecological, and evolutionary determinants of warming tolerance in ants. Global Change Biology, 18, 448-456.
Onymacris bicolor	Coleoptera	49	Roberts, C. S., et al. (1991). Body temperature of namib desert tenebrionid beetles - their relationship in laboratory and field. Physiol. Entomol., 16, 463-475.
Onymacris unguicularis	Coleoptera	49	Roberts, C. S., Seely, M. K., Ward, D., Mitchell, D., & Campbell, J. D. (1991). Body temperature of Namib Desert tenebrionid beetles: their relationship in laboratory and field. Physiological Entomology, 16, 463-475.
Gonocephalum simplex	Coleoptera	49.3	Calosi, P., Bilton, D. T., Spicer, J. I., Votier, S. C., & Atfield, A. (2010). What determines a species' geographical range? Thermal biology and latitudinal range size relationships in European diving beetles

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
			(Coleoptera: Dytiscidae). Journal of Animal Ecology, 79, 194–204.
Gonocephalum simplex	Coleoptera	49.5	Klok, C. J., Sinclair, B. J., & Chown, S. L. (2004). Upper thermal tolerance and oxygen limitation in terrestrial arthropods. Journal of Experimental Biology, 207, 2361-2370.
Megetra cancellata	Coleoptera	49.8	Cohen, A. C., & Pinto, J. D. (1977). An evaluation of xeric adaptiveness of several species of blister beetles (Meloidae). Annals of the Entomological Society of America, 710, 741-749.
Phodaga alticeps	Coleoptera	49.8	Cohen, A. C., & Pinto, J. D. (1977). An evaluation of xeric adaptiveness of several species of blister beetles (Meloidae). Annals of the Entomological Society of America, 710, 741-749.
Cataglyphis cursor	Hymenoptera	50	Cerda, X., Retana, J., & Cros, S. (1998). Critical thermal limits in Mediterranean ant species: trade-off between mortality risk and foraging performance. Functional Ecology, 12, 45-55.
Onymacris rugatipennis rugatipennis	Coleoptera	50	Roberts, C. S., et al. (1991). Body temperature of namib desert tenebrionid beetles - their relationship in laboratory and field. Physiol. Entomol., 16, 463-475.
Cataglyphis cursor	Hymenoptera	50	Cerda, X., Arnan, X., & Retana, J. (2013). Is competition a significant hallmark of ant (Hymenoptera: Formicidae) ecology. Myrmecological News, 18, 131-147.

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
Pleuropasta reticulata	Coleoptera	50.2	Cohen, A. C., & Pinto, J. D. (1977). An evaluation of xeric adaptiveness of several species of blister beetles (Meloidae). Annals of the Entomological Society of America, 710, 741-749.
Onymacris unguicularis	Coleoptera	50.4	Roberts, C. S., et al. (1991). Body temperature of namib desert tenebrionid beetles - their relationship in laboratory and field. Physiol. Entomol., 16, 463-475.
Proformica ferreri	Hymenoptera	50.4	Fernández-Escudero, I., & Tinaut, A. (1998). Heat-cold dialectic in the activity of Proformica longiseta, a thermophilous ant inhabiting a high mountain (Sierra Nevada, Spain). International Journal of Biometeorology, 41(4), 175-182.
Pleuropasta reticulata	Coleoptera	50.4	Roberts, C. S., et al. (1991). Body temperature of namib desert tenebrionid beetles - their relationship in laboratory and field. Physiol. Entomol., 16, 463-475.
Onymacris plana	Coleoptera	50.5	Roberts, C. S., et al. (1991). Body temperature of namib desert tenebrionid beetles - their relationship in laboratory and field. Physiol. Entomol., 16, 463-475.
Onymacris rugatipennis	Coleoptera	50.5	Roberts, C. S., et al. (1991). Body temperature of namib desert tenebrionid beetles - their relationship in laboratory and field. Physiol. Entomol., 16, 463-475.
Apis mellifera	Hymenoptera	50.7	Atmowidjojo, A. H., Wheeler, D. E., Erickson, E. H., & Cohen, A. C. (1997). Temperature tolerance and water balance in feral and domestic honey bees, Apis mellifera L. Comparative Biochemistry and Physiology Part A: Physiology, 118, 1399-1403.

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
Physadesmia globosa	Coleoptera	50.8	Roberts, C. S., et al. (1991). Body temperature of namib desert tenebrionid beetles - their relationship in laboratory and field. Physiol. Entomol., 16, 463-475.
Formica obscuripes	Hymenoptera	51	O'Neill, K. M., & Kemp, W. P. (1990). Worker response to thermal constraints in the ant Formica obscuripes (Hymenoptera: Formicidae). Journal of Thermal Biology, 15, 133-140.
Ocymyrmex weitzeckeri	Hymenoptera	51	De Bie, G., & Hewitt, P. H. (1990). Thermal responses of the semi-arid zone ants Ocymyrmex weitzeckeri (Emery) and Anoplolepis custodiens (Smith). Journal of the Entomological Society of Southern Africa, 53, 65-73.
Physadesmia globosa	Coleoptera	51	Cohen, A. C., & Pinto, J. D. (1977). An evaluation of xeric adaptiveness of several species of blister beetles (Meloidae). Annals of the Entomological Society of America, 710, 741-749.
Tegrodera erosa	Coleoptera	51	Cohen, A. C., & Pinto, J. D. (1977). An evaluation of xeric adaptiveness of several species of blister beetles (Meloidae). Annals of the Entomological Society of America, 710, 741-749.
Proformica longiseta	Hymenoptera	51.1	Fernández-Escudero, I., & Tinaut, A. (1998). Heat-cold dialectic in the activity of Proformica longiseta, a thermophilous ant inhabiting a high mountain (Sierra Nevada, Spain). International Journal of Biometeorology, 41(4), 175-182.

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
Eciton burchellii	Hymenoptera	51.3	Meisel, J. E. (2006). Thermal ecology of the neotropical army ant Eciton burchellii. Ecological Applications, 16(3), 913-922.
Cetonischema aeruginosa	Coleoptera	51.4	Renault, D., Vernon, P., & Vannier, G. (2005). Critical thermal maximum and body water loss in first instar larvae of three Cetoniidae species (Coleoptera). Journal of Thermal Biology, 30, 611-617.
Ocymyrmex robustior	Hymenoptera	51.5	Marsh, A. C. (1985). Thermal responses and temperature tolerance in a diurnal desert ant, Ocymyrmex barbiger. Physiological Zoology, 58, 629-636.
Pogonomyrmex rugosus	Hymenoptera	51.59	Lighton, J. R., & Turner, R. J. (2004). Thermolimit respirometry: an objective assessment of critical thermal maxima in two sympatric desert harvester ants, Pogonomyrmex rugosus and P. californicus. Journal of Experimental Biology, 207(11), 1903-1913.
Pogonomyrmex rugosus	Hymenoptera	51.6	Chown, S. L., Hoffmann, A. A., Kristensen, T. N., Angilletta, M. J., Stenseth, N. C., & Pertoldi, C. (2010). Adapting to climate change: a perspective from evolutionary physiology. Climate Research, 43, 3–15.
Nysius groenlandicus	Hemiptera	51.6	Bocher, J., & Nachmand, G. (2001). Temperature and humidity responses of the arctic-alpine seed bug Nysius groenlandicus. Entomologia Experimentalis et Applicata, 99, 319-330.

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
Pogonomyrmex californicus	Hymenoptera	51.7	Marsh, A. C. (1985). Thermal responses and temperature tolerance in a diurnal desert ant, Ocymyrmex barbiger. Physiological Zoology, 58, 629-636.
Pogonomyrmex californicus	Hymenoptera	51.78	Lighton, J. R., & Turner, R. J. (2004). Thermolimit respirometry: an objective assessment of critical thermal maxima in two sympatric desert harvester ants, Pogonomyrmex rugosus and P. californicus. Journal of Experimental Biology, 207(11), 1903-1913.
Cataglyphis bombycina	Hymenoptera	53.6	Gehring, W. J., & Wehner, R. (1995). Heat shock protein synthesis and thermotolerance in Cataglyphis, an ant from the Sahara Desert. Proc. Natl. Acad. Sci. USA., 92, 2994-2998.
Cataglyphis cursor	Hymenoptera	53.6	Wehner, R., Marsh, A. C., & Wehner, S. (1992). Desert ants on a thermal tightrope. Nature, 357, 586-587.
Cataglyphis bicolor	Hymenoptera	55.1	Gehring, W. J., & Wehner, R. (1995). Heat shock protein synthesis and thermotolerance in Cataglyphis, an ant from the Sahara Desert. Proc. Natl. Acad. Sci. USA., 92, 2994-2998.
Spodoptera exempta	Lepidoptera	55.94	Klok, C. J., & Chown, S. L. (1998). Field thermal ecology and water relations of Gregaria phase African Armyworm caterpillars, Spodoptera exempta (Lepidoptera: Noctuidae). Journal of Thermal Biology, 23, 131-142.

Table 2: CT_{max} Data Set (cont'd)

Species name	Taxonomic Order	CT_{max} (°C)	Reference
Spodoptera exempta	Lepidoptera	55.94	Klok, C. J., & Chown, S. L. (1998). Interactions between desiccation resistance, host-plant contact and the thermal biology of a leaf-dwelling sub-antarctic caterpillar, Embryonopsis halticella (Lepidoptera: Yponomeutidae). J. Insect Physiol., 44, 615-628.
Spodoptera exempta	Lepidoptera	55.94	Denny, M. W., Hunt, L. J. H., Miller, L. P. & Harley, C. D. G. (2009). On the prediction of extreme ecological events. Ecological Monographs, 79, 397–421.
Melaphorus bagoti	Hymenoptera	56.6	Chown, S. L. & Nicolson, S. W. (2004). Insect Physiological Ecology. Mechanisms and Patterns, 1st edn. Oxford University Press, Oxford.
Melaphorus bagoti	Hymenoptera	56.7	Christian, K. A., & Morton, S. R. (1992). Extreme thermophilia in a central Australian ant, Melophorus bagoti. Physiological Zoology, 65(5), 885-905.